COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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What Every Coal Man Knows

THAT if the railroads were now to supply all the cars and transportation ordered by the soft-coal mines—to reduce "car shortage" to zero—the coal producers would not only not be able to sell the coal that would thus be produced but would get a far lower price than now obtains for that which they did produce.

That with mines and labor ready to produce 13,000,000 tons and upward per week, with consumption less than 9,000,000 tons weekly and with stocks of bituminous coal in the hands of consumers now equal to, if not in excess of, thirty days' requirements, a gain of a million tons per week in production would flatten out the soft-coal market to a distressing position.

That, in fact, the car shortage is the only thing that sustains the price of soft coal, and that in spots it is not even doing that.

In the week of Nov. 4 the railroads reported to the American Railway Association that 412,679 cars were ordered by the bituminous-coal mines for current loading. These, if supplied and loaded, would have given an output of more than 20,000,000 tons, or twice the actual output that week. This figure doubtless represents the present rating of the mines, and as everyone knows that the ratings are inflated no one will consider that the mines could have produced and loaded that quantity of coal had the railroads been able to supply the cars.

Cars placed—that is to say, constructively placed, for every car that is held over either empty or under part load is counted each successive day—numbered 220,039, according to the same authority. This represented 53 per cent of the orders; the car supply was therefore but 53 per cent. For the same week the reports to the Geological Survey of time worked and lost by causes at these mines showed Ohio and eastern Kentucky working less than 40 per cent of full time and other districts ranging upward to Alabama at 82 per cent. The average for the country was around 43 per cent, and of the more than half time lost the greater part was attributed to transportation disability or "car shortage."

Instead of this obviously inflated base on which to calculate the extent of the railroads' shortcomings, let us compare the present rate of production to the maximum recorded weekly output of bituminous coal, 13,000,000 tons. There can be little doubt but that were production to mount to 13,000,000 tons per week the demands of all consumers would soon be satisfied. In fact such an output would rapidly meet all needs, for it would put something over 2,000,000 tons more per week into stocks and thus double the rate of accumulation of reserves. The present weekly output is 82 per cent of that maximum, and the car supply, measured in a more reasonable manner, is thus 82 per cent and not 53 per cent.

The railroads are now exceeding all previous records in loading freight of all kinds, between 900,000 and 1,000,000 cars per week being the usual thing. They could boost the bituminous-coal production to 12,000,000 tons per week and higher were they willing to make the effort. There have been in effect priority orders affecting the supply of transportation for this commodity that if followed by the railroads would have brought this result. Previous high records of coal loading always have been reached through the imposition and strict application of such priorities. Objection to literal observance of priorities of this nature is found in the consequent denial of transportation to other commodities such as ore, limestone, steel products, building materials, and even anthracite, that move in open-top equipment. Many of these other offerings are better revenue producers than soft coal. Possibly the railroad officials have an eye on the general situation and consider that coal will move next week if not this, while some of the other kinds of freight might not. This year coal has not had its normal share of the transportation.

It is quite true, as continually pointed out by the coal operators and mine workers, that lack of transportation alone holds down production during periods such as this autumn, when the consumers are demanding large tonnages. It is also true that while the demand for coal at any given time may be twice the current rate of production the total requirements in a season are limited and there never has been a year, save 1916 and 1917, the end of which did not see the demand well satisfied. From the date in August when the strike was settled to the end of 1922 there will be produced about 190,000,000 tons of bituminous coal. It is being produced at an average rate of between ten and eleven million tons per week. If the railroads had been able in August and September to supply the transportation it would have poured forth at 15,000,000 tons per week for a few weeks. At that rate every stockpile would have been overflowing in four weeks and the demand and output of soft coal would have dropped to around 9,000,000 tons and the price would have been like unto last March.

We in this country can have peakload transportation for 13,000,000 or 15,000,000 tons of bituminous coal per week without a car shortage if we are willing to pay for it. But since the requirements for such tonnages are spasmodic and of short duration, coal-freight rates would have to carry the charges sufficient to support the capital investment necessary to supply the additional equipment and facilities. This might conceivably add from 25 to 50 per cent to the coal freight rates. The railroads would add nothing to their total tonnage carried by such a program.

On the other hand the country pays for the lack of sufficient transportation during periods of peak demand by paying more for spot coal. A measure of this is found by comparing the average realization of the bituminous-coal operators, as reported by the Geological

Survey, for the big year of 1920, when spot coal reached $15, and the poor year, 1921, when the price dropped below $2. The average for all bituminous coal in 1920 was $3.78 and in 1921, $2.89, or a drop of 89c. per ton.

Furthermore, every coal man knows that the railroads' share in transporting an annual production of 450,000,000 tons of bituminous coal can be accomplished without strain if even approximately divided throughout the year. He also knows that although the immediate lack of this autumn is transportation, the real cause of car shortage, coal shortage and high prices this year is the strike called by the United Mine Workers last April.

Where the Inefficiency Lies

OUR contemporary the *Gas Age-Record* in a recent issue comments editorially on the "inadequate organization [the Geological Survey] now employed to collect and distribute coal statistics" and deplores the fact that it is not possible "to take the figures given out by the Geological Survey, and draw definite and accurate conclusions." It appears that the *Gas Age-Record,* like a host of others, including ourselves, is surprised at the volume of stocks of bituminous coal in the hands of consumers, as reported recently by the Survey. Having taken the reported stocks of coal as of last April, added current production and subtracted estimated consumption week by week, the *Gas Age-Record,* like the rest of us, found that by the time the strike was ended, in August, the reserve of coal was something less than zero.

None but amateur calculators took this conclusion seriously. Informed observers noted as early as the middle of July that there were other factors involved than were currently reported in the Survey's weekly reports. The market was entirely too steady for there to be such a paucity of coal. The figure reported as of Sept. 1, 22,000,000 tons, is higher than we expected, but the unknown factor, coal in transit, on which data are now available, explains the result.

The editor of the *Gas Age-Record* does not want to reflect on the "distinct service" rendered by the Survey in its weekly report, but does charge it with inefficiency. The inefficiency is, we believe, on the part of those who use the figures, or rather overuse them. We have extrapolated these figures ourselves and have missed the mark at times, but never so far that we were moved to seek an alibi by assailing the source of the data, the accuracy of which we were not disposed to question.

Coal Cost in Relation to Water Power

A SUGGESTIVE thought was expressed recently by Dr. Charles P. Steinmetz with respect to the influence of the cost of coal on the development of water power. After pointing out that in New York State there are developed water powers producing energy equivalent to 10,000,000 tons of coal as compared with an actual total consumption in the state of 54,000,000 tons, he notes that there are undeveloped water powers capable of saving 34,000,000 tons of coal.

California has 1,130 kw. of hydraulic energy per capita as compared with 135 kw. of fuel power. New York has 277 kw. of hydraulic power and 403 kw. of fuel power according to Dr. Steinmetz. California has no coal and what is imported comes from great distances and is costly. New York has always had cheap coal for industry. The Western state has had a powerful incentive for developing her water power and the Eastern state has not. It is pointed out that the cost of coal in New York is now as high as it was in California when that state forced the development of hydraulic power.

The high initial cost of installation of water power is what has held it back, but when that is offset or more than balanced by a high price for coal, capital investment turns to the rivers and coal loses a permanent market. The change will be gradual, but we agree with Dr. Steinmetz that it is sure. It does not follow that the consumption of coal will in consequence become less, but rather that it will not grow with the industrial development of the country. Water power can never supplant the use of coal in its entirety, even for supplying electrical energy, for the relative costs always tend to equalize and local conditions must always have a powerful influence on the choice between the two basic sources of power.

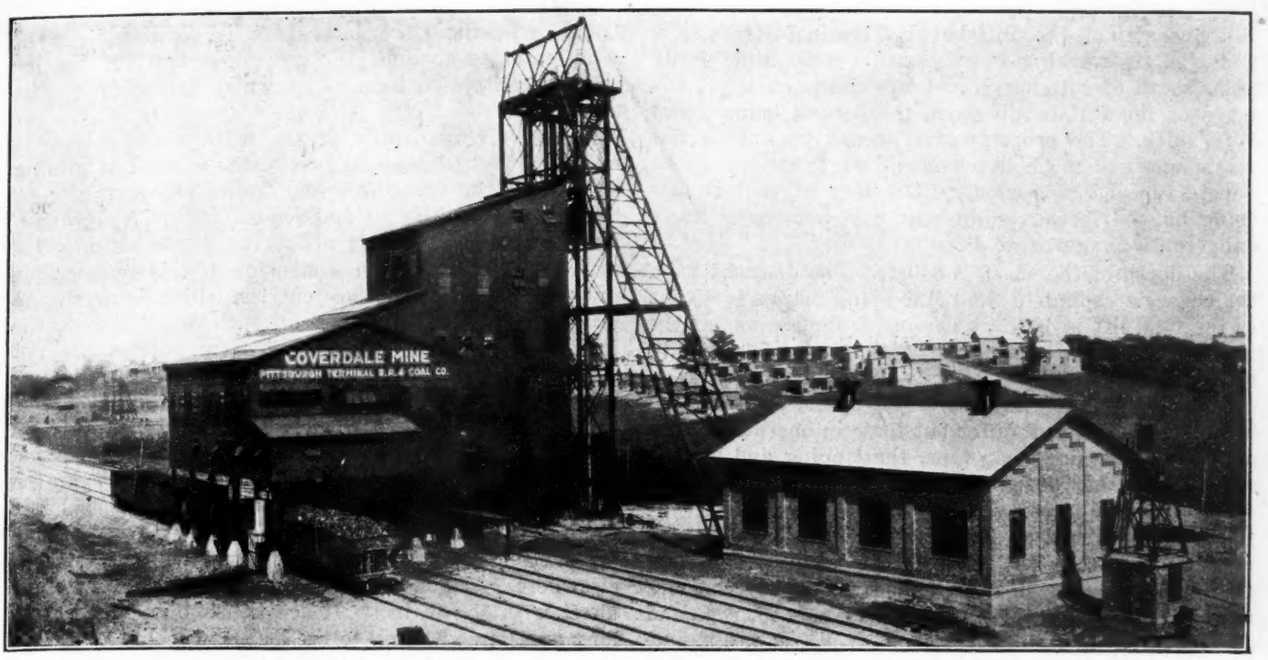
Can Soft Coal Retain Domestic Trade?

ANTHRACITE operators are frankly concerned over the possibility that forced substitution of other fuels for hard coal this winter will make permanent inroads on their business. It has been twenty years since the East has lacked hard coal to meet its household requirements. The Easterner is not now particularly pleased when he is required to take bituminous coal and he is but slowly heeding the advice that he do so, at least to the extent of protecting his early requirements.

On the other hand, there are those bituminous-coal producers in the high-grade fields nearest to the Atlantic seaboard who have for years looked longingly at the steady, dependable market enjoyed by the producer of domestic sizes of anthracite. He has wanted to introduce his product in competition, as the hard-coal seller has sought to push his steam sizes on the markets of the soft-coal man.

Because bituminous coal has never participated in the household trade of the East, bituminous coal has not, save in exceptional instances, been prepared for that market. The result now is that when the soft-coal shippers are called on to help fill the gap caused by the strike in the hard-coal mines they have nothing but run-of-mine to ship. Straight run-of-mine coal is not a satisfactory household coal. No one likes to use it. Hotels, office buildings and apartment houses with fully equipped steam plants can and do take mine-run coal, as in Chicago, where run-of-mine smokeless coal is the favored fuel. But the householder wants sized lumps. If the bituminous-coal producer has a desire to retain any of the market now thrust upon him he must cater to that market. Several of these producers have announced the installation of equipment for sizing their product, and the indications are that others will follow. Some of the central Pennsylvania coals will not lend themselves to this treatment, being too friable, but others have already been proved to be real household coal.

The present is an opportunity for the soft-coal men so situated that they can ship into the Eastern territory. Having matched preparation with anthracite, they will have lower price to set against cleaner, smokeless product, shipped from mines that never have car shortage.



Coverdale Mine to Hoist 4,000 Tons per Day Is Fitted With Two-Car Self-Dumping Cages

Disadvantage of Skip When Tonnage Is Under 5,000 Daily and Shaft Depth Moderate — How Cars in Single File Form "Twos" at Shaft and Enter Single File Beyond

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UNLESS a speed is attained both dangerous and undesirable, 4,000 tons of product cannot be raised satisfactorily in cages in an eight-hour day up a two-compartment shaft, even though that shaft be of only moderate depth. It may be said that the end may be attained by putting two cars in tandem on a single cage, thus increasing the capacity of the shaft.

Unfortunately, though it is easy to arrange to put two cars end for end on a cage, when it is done they cannot be made self-dumping, and time will be lost spotting the cage at the landing, pushing the cars off the cage and either loading other empty cars in their stead or dumping the cars as received and backing them onto the cage. Furthermore with the decaging and dumping arrangements two more men must be employed. The suggestion may be made that cages with two or more decks each lifting one car might be used and indeed they have been tried, but it has been found that too much time is lost in caging and decaging.

Unless 5,000 tons is to be raised per shift skip hoisting is not desirable, though it might be a preferable method of handling coal at great depths. It brings a large tonnage up whenever the mine bottom is filled and it would overburden any tipple that was designed to prepare and load an output under 5,000 tons per shift. The maximum efficiency of a skip is realized only when it is operated at a fair speed. To handle the flood of coal that is brought up a shaft whenever a trip brings a string of cars to the bottom, the tipple must be run at overload with resulting poor preparation or else the speed of hoisting must be stepped down to the rate of preparation for which the tipple was designed.

Increased tipple capacity to cope with high-speed hoisting under the conditions stated is not desirable as there then would be idle periods between trips. It is a different matter with 500-ft. shafts or deeper. In that case skip hoisting is ideal for tonnages of 4,000 or even less, depending upon the depth, as much time is consumed in raising the coal from the bottom to the dump plate.

In a shaft of moderate depth and with a 4,000-ton output only one of the many advantages which skip hoisting affords—the ability to use gateless mine cars—is retained; but this advantage is offset by the complexity of the equipment with which the shaft bottom must be provided. The skip hoist is primarily an aid to the rapid lifting of great tonnages up a single shaft of moderate depth or moderate tonnages up a single shaft of great depth.

Four thousand tons of coal may be hoisted successfully by another means—namely, through the employment of a cage holding two cars placed side by side in conjunction with a four-track bottom. Such an installation has been in successful operation for several years at the mine of the Monroe Coal Co. at Revloc, Pa., and one installed more recently at the Coverdale mine, or

NOTE—The headpiece shows the Coverdale mine plant. The tank, of unusual shape mounted on four legs on the roof of a small brick building on the extreme right, is a pressure and cooling tank for water circulated around the flywheel bearings and the slip regulator by a small centrifugal pump.

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No. 8 shaft, of the Pittsburgh Terminal Railroad & Coal Co., is working equally well. This mine is 12 miles south of Pittsburgh and has approximately 3,000 acres of the Pittsburgh seam, the deposit being about 5 ft. thick. The property was opened up only a few years ago, and much development work has yet to be done. In consequence only 1,800 tons of coal is now being hoisted in each eight-hour day, but the ultimate daily run will aggregate 4,000 tons.

The depth of the shaft is 340 ft. The distance from the concrete coping to the point of discharge is 65 ft., so the total lift is 405 ft. The inside dimensions of the shaft are approximately 11 x 36 ft., the unusual width being necessary to accommodate the Lepley cages, each carrying two 2½-ton mine cars side by side. The cages are self-dumping and differ but little in operating principle from the single-car type, the tipping and locking guides and other devices being practically the same in each. In order to carry safely the heavier loads resulting from hoisting two cars in one lift the cages, which measure 10 ft. 6 in. x 12 ft., are more heavily constructed than is usual. The 10-ft. head sheaves also are heavier than in most headframes. They carry a 1⅛-in. rope and are mounted on a 10-in. steel shaft. The headframe itself is more substantial than that which is provided at most mines. Heavy headframes are sometimes made up of fabricated columns cross-latticed, but the headframe over the Coverdale shaft is composed of six solid-sectioned columns for posts and two for the inclined compression legs, all of which are securely batter-braced.

Before giving details of the main shaft bottom it might be well to describe briefly the method of mining as regards the immediate and future recovery of coal, the underground layout and related facts. A rectangular block of coal is left about the shaft bottoms for protection. The greater dimension of this rectangle is in the direction of the face entries, which lie north and south—the usual direction of such workings in the Pittsburgh seam. The main bottom entries are not driven at 90 deg. to the main face entries, as is frequently the case, but on an angle of about 70 deg. The surface topography, railroad needs and the elimination of excessive cutting and filling influenced the location of the shaft and main bottom entries. They are so placed as to allow an incoming motor with a load trip to uncouple and pick up the empty trip with a minimum of confusion and delay. This feature will be described elsewhere. The double entries connecting the supply shaft with the main shaft are approximately 1,100 ft. long and lie at 90 deg. to the load and empty tracks on the main bottom and parallel with the spur railroad track on the surface. The surface topography fits in well with the shaft locations and affords an ideal sur-

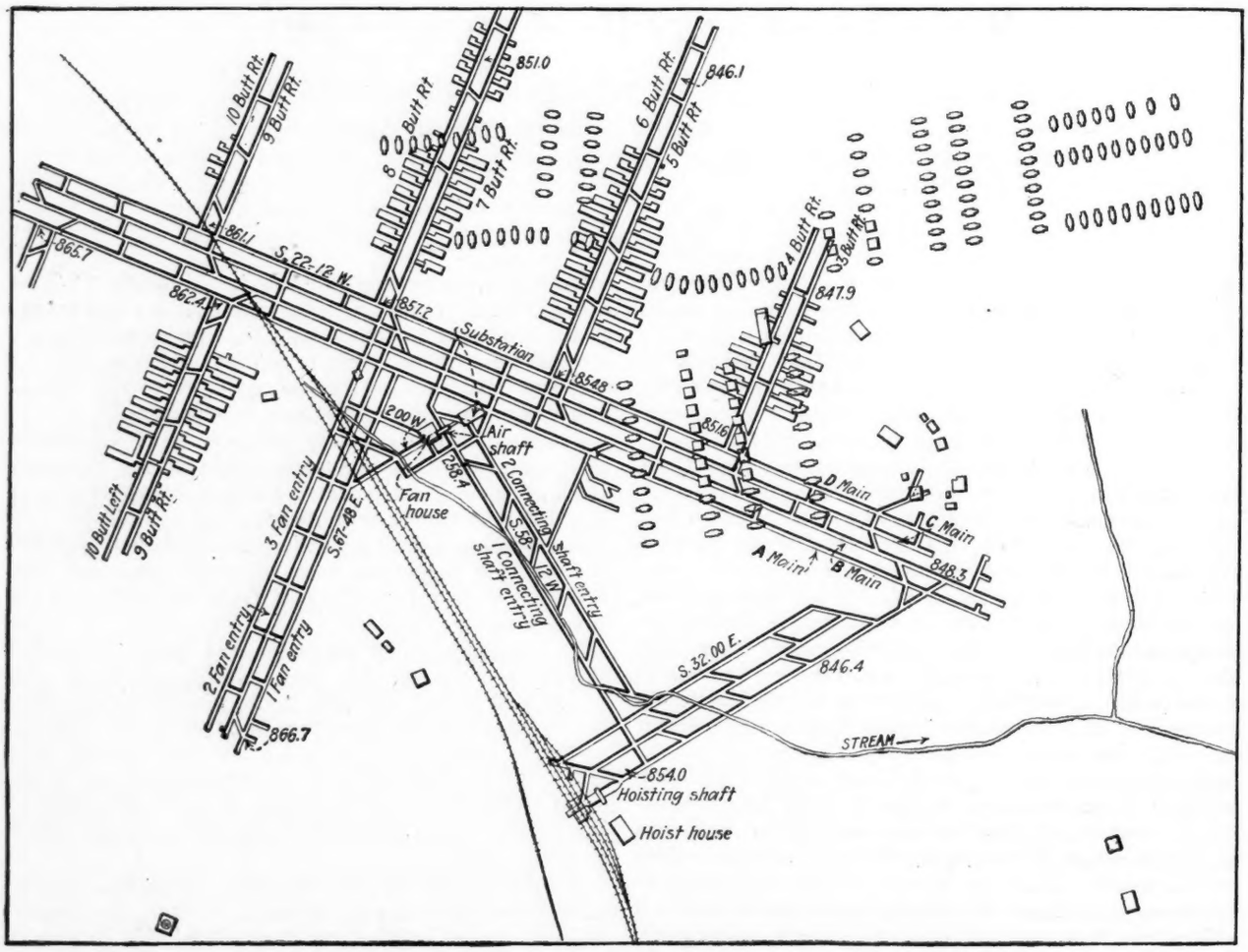


FIG. 1—MINE AND VILLAGE OF THE COVERDALE, OR NO. 8, SHAFT OF THE PITTSBURGH TERMINAL RAILROAD & COAL CO.

A stream lies between the hoisting shaft and the village. This isolation has its advantages in keeping people from congregating around the mines and children from playing on the railroad tracks. The valley will in time, however, be filled with rock by means of a larry with distributing conveyor.

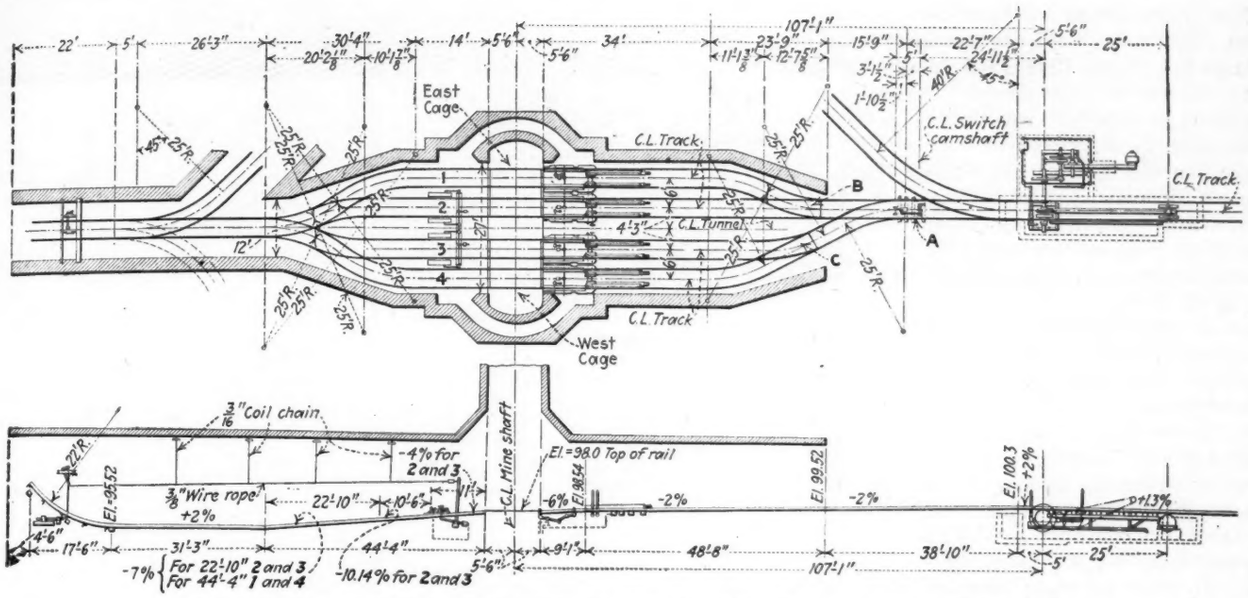


FIG. 2—SHAFT BOTTOM WITH FOUR TRACKS LEADING TO AND FROM TWO CAGES

The switches provide automatically that the cars will go to the proper track. The kickback on the left of the illustration releases the cars on the empty track one by one, so that they do not collide but take the switch to the empty pit in such order as to avoid one another, without, however, occasioning any undue delay.

face-plant layout. All this may be noted in Fig. 1, which shows a portion of the mine map upon which are superimposed a few of the surface buildings. It will be noted that a low-lying basin separates the town proper and the area occupied by the surface plant, and that the bottom of the depression passes close by the supply shaft. The town itself lies on a hill that flanks the eastern edge of the basin. This natural hollow is a benefit in two ways. It partly separates the town from the plant and affords a convenient dumping ground for the refuse rock from the mine.

The men traveling from the town to work and returning therefrom keep throughout their journey on the opposite side of the valley from the tipple and main shaft and do not come anywhere near either. In this way the men at work at the main shaft are free from the interruption of passing and loitering men.

A Heyl & Patterson refuse-stacking car disposes of the slate. The slate track passes under the rock bin on the tipple and skirts the edge of the hollow approximately parallel with the railroad track. The conditions are such as to favor easy slate disposal at low cost because of the short haulage and straight track.

Air and Main Shafts Over Thousand Feet Apart

As already has been mentioned, the auxiliary or air, shaft is 1,100 ft. from the main shaft. Ordinarily the shaft for lowering men is placed close to the one up which coal is hoisted. Surface management is facilitated by the grouping of its several structures as close together as possible and certainly closer supervision is obtained, but the arrangement has the disadvantage that men will then occupy their time by "loafing" around the main shaft and tipple. Furthermore, in the early stages of development, mining activities are concentrated about the big bottom, consequently the miners have a short distance to travel to their working places, no matter where the main shaft may be. After development it makes little difference whether the men are lowered at a point near the big bottom or many hundred feet away. Few men work in the vicinity of the big bottom. Each plan has its advantages and disadvantages, but these do not entirely govern the selection, for surface features and other related factors have a direct bearing on the final plan.

The mine is laid out on the quadruple-entry system. At 2,000-ft. intervals two face entries are driven, and from these two butt entries are extended every 500 ft.

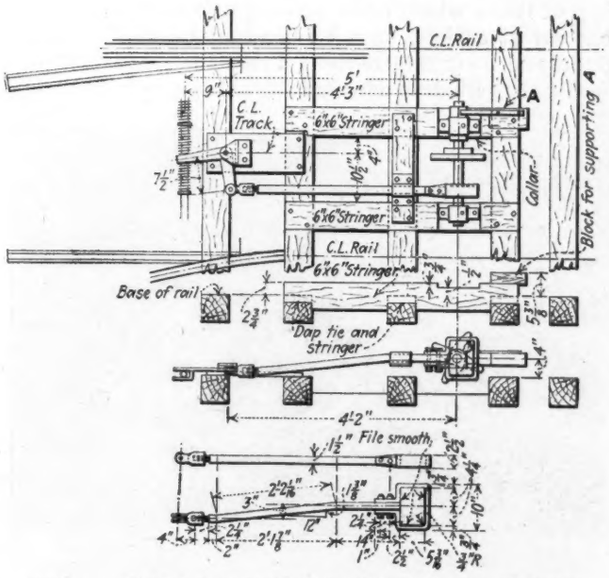


FIG. 3—TWO-CAR TURNSTILE SELF-ACTING SWITCH

The operating principle is as follows: Two steel bars, welded together so as to form four spurs, are securely fastened to a horizontal shaft from which protrudes a flat-faced steel cam. This operates within a square band socket to which is fastened a connecting rod. As the cam makes a complete revolution it has two positions at which it is in actuating contact with the socket. In one it presses on one side of the socket, pushing the connecting rod forward and opening the switch; in the opposite it presses the other side of the socket, pulling the connecting rod back and closing the switch. These positions correspond to two positions of the spur wheel. The movements between these positions are without effect. Thus one car passing over will move a spur, closing the switch, and the next will actuate another spur without changing the switch points. The third will push forward another spur and open the switch. The fourth will pass over, revolving the spur wheel one-quarter revolution, but leaving the switch unchanged. Thus two cars will go into one track followed by two into another.

The width of the wing pillars on either side of the main entries is 150 ft. Rooms on 39-ft. centers will be driven in two directions off each butt heading in a system of half advance and half retreat. The room dimensions will be 250 x 21 ft. These will be worked in sets of ten, maintaining the usual break line in pillar drawing of 45 deg. to the butt entries. In keeping with this system the pillars are brought back immediately upon the completion of the driving. When the room of any number in the last nearly completed set is driven up, a room of the corresponding number is started in the next set. The early room coal is coming principally from the right butts off the north mains. This locality underlies the town. The ribs in this section must be allowed to stand at least till the mine is finished. When entry driving has been sufficiently advanced, activities will be shifted elsewhere.

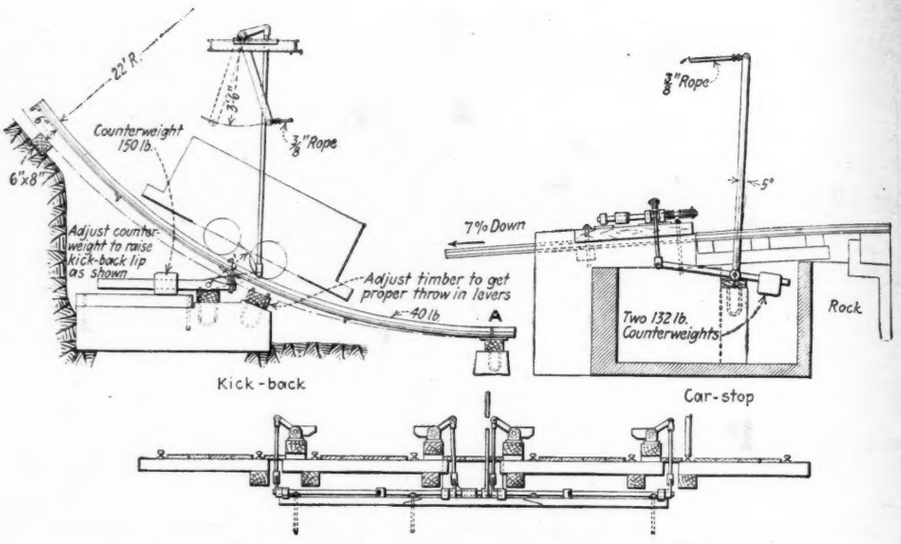


FIG. 5.—AUTOMATIC KICKBACK AND CAR STOP

The car runs up the kickback, and just about where it reverses, the rail, held up till that time by a counter-weight, descends and actuates the car stop, which releases another car. This car arrives at the switch of the empty track almost immediately after the car from the kickback has passed out of the way.

The coal lies practically flat; in fact it is so nearly level that it has not been thought necessary to provide the mine cars with brakes. The haulage motor with a loaded trip pulls into the main bottom as far as a trip feeder. Here it is cut off and runs around to the empty-car entry. At this point it picks up its trip and without delay starts back to the workings. The trip of loads, which never exceeds fifty cars, is elevated, one car at a time, up a 1.3-per cent grade by a 25-ft. chain and hook trip feeder. From the knuckle of this feeder the cars drop down a favorable grade and through

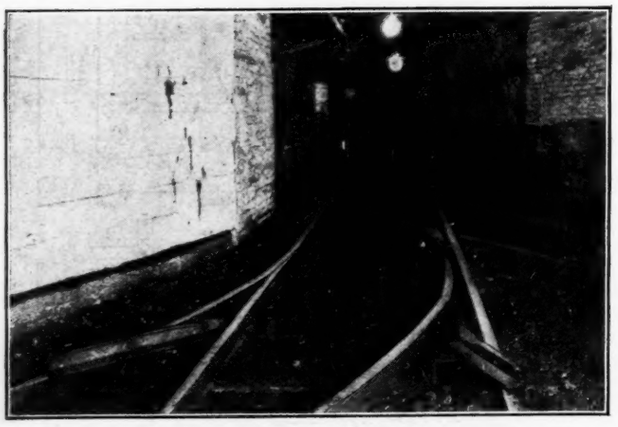


FIG. 4—SWITCH BUILT TO REVERSE AS CAR PASSES

The tread plates of this switch are securely fastened to the latches and rest on greased bearing plates. Side pressure from a passing car wheel imparts a stiff body movement to the rigid plate and latch connection, throwing the points. Thus every car in passing sets the switch so as to divert the following car into another track from that which the first has taken.

automatic switches to the shaft. A plan and profile of the shaft bottom are shown in Fig. 2.

Cars in sets of two in passing through the first automatic switch at *A* are diverted alternately to the track leading to the east or west cage. Let us say that this switch is set to allow two cars to pass on to the east cage. The foremost of the two cars will be diverted either to the right or left track leading from *B* to the east cage, depending upon the setting of the wheel-thrown switches at *B*. Whichever track the first car passes over, its wheels throw the switch points at *B* for the opposite track, over which the second car passes. The next set of two cars in passing over the switch at *A* will set it so as to allow them to drop down to the west

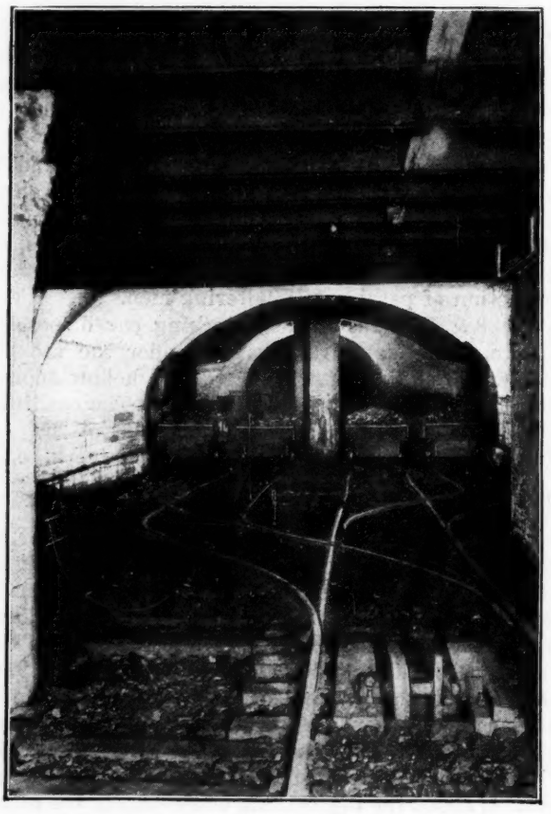


FIG. 6—LOAD SIDE OF SHAFT BOTTOM

Looking toward the shaft. The illustration is made from a photograph taken on a day when the mine was idle. This accounts for four loaded cars being at the landing. Ordinarily there are only two, both on either one of the two sides. Note the well-concreted arch in the rear, the 12-in. beams in the foreground resting on a heavy side wall of pressed brick.

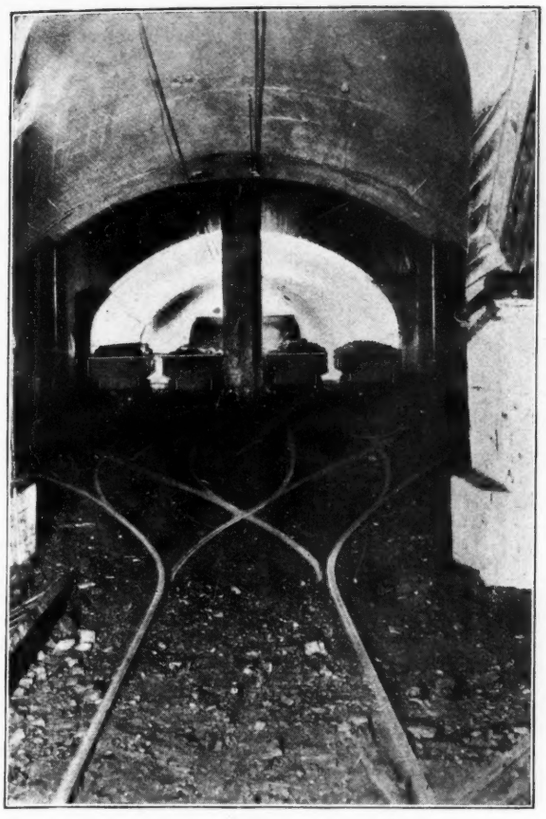


FIG. 7—EMPTY SIDE OF SHAFT BOTTOM.

Looking toward the shaft. The empties (here shown loaded) drop down this grade of 7 per cent to a kickback to the rear of the point from which the photograph that this illustration reproduces was taken. The ropes seen along the roof connect the swinging kickback with automatic car stops located on the inner tracks.

cage, going through a similar switching device at *C* as is found at *B*. Reference to the illustrations, Figs. 3 and 4, and the captions thereunder will aid the reader in understanding the working principle of these two switches.

After passing the last switch points the cars drift down toward the cage. The grade to the cage is steep, so that the cars attain much speed on their way and must be slowed down and stopped. This is accomplished by four friction car checks, one on each track. These are of the usual type, consisting of a heavy wheel clamp of structural-steel held against each rail by strong steel-coil springs and operated from a point centrally located in front of the cages. These car checks are designed with provisions for the future installation of an air cylinder, so that eventually they may be operated pneumatically.

Upon being released from the car checks the two cars on the approach to the cage next to be landed drift down simultaneously to the cager, where they are held by horns until the cage descends into position. The cager, which is automatic in the setting and resetting of the horns at the cage landing and in raising and depressing the car stops that hold the cars on the cage, varies from the usual type only in its handling two cars instead of one.

The arrangement on the empty side whereby the two empty cars coming from the cage are passed to the empty storage track, however, is unusual. As the empty cars run off the cage the inner one will be held by a car stop and the end one is delivered directly to a pivoted kick-back that automatically releases the inner car from its stop after the first car reaches the kick-back. Sections showing the details both of the kick-back and the car stop comprise Fig. 5.

It will be seen from the drawing that the curved kick-back rails are held securely at gage by means of angle irons fastened on the bottom, or flange. The lower ends of these rails are pivoted where they join the level track at *A*. The car is shown in the illustration directly above a knife edge on the kick-back. The weight of the car when it approaches this point depresses a counterweighted lever arm to which is linked a vertical rod. This rod again connects with an L-shaped lever, which when acted upon by the vertical pull of the vertical rod causes it to pull on a horizontal rope that is attached to it. The other end of the rope is connected to the car-stop release. The depression of the kick-back is only sufficient to release the car stops. After the car has left it the kick-back is elevated by the lever action of the counterweight.

The car-stop mechanism is simple in construction and in operation. The rope from the kick-back connects with the upper ends of horizontally axled levers, to which are welded counterweighted lever arms. To the ends away from the counterweights on these levers are pinned vertical tie rods which when depressed cause the lugs that protrude out over the rail and in front of the car wheels to be swung into the clear. The released car then passes by gravity to the kick-back and the lugs fall back over the rail to catch the next inside car coming from a landed cage. The cars after leaving the kick-back are sidetracked to the empty-car entry. This equipment was furnished by Heyl & Patterson, Inc., of Pittsburgh, Pa.

The shaft-bottom equipment, although it appears to be complicated, is simple and positive in action. One begins to realize this only after having watched the operation in which a ton of coal may be raised every 8 seconds if so desired, and the cars fed, caged and uncaged by only three men, one of whom does the lubricating and inspecting of the mine cars and makes

FIG. 8—SIDETRACK FOR MAKING UP EMPTY-CAR TRIP

A heavily pitched timbering lagged with 2-in. stuff and tightly backfilled holds the high roof above this track. The sidewalls are of concrete.

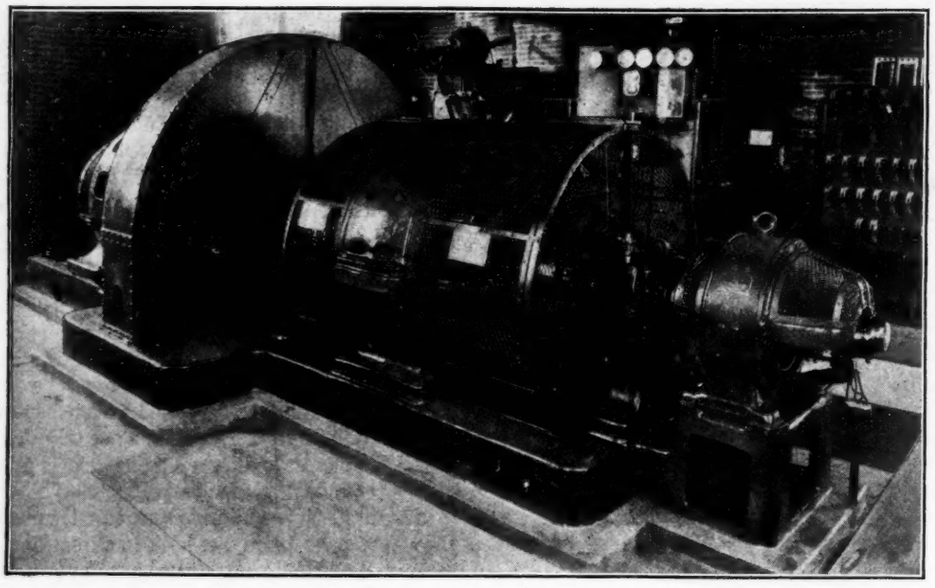


FIG. 9

Motor-Generator Set

From left to right: induction motor, flywheel, direct-current generator and low-voltage exciter, all covered or at least guarded. The room also contains the contactor panel, the slip regulator, the switchboard and other auxiliaries. The hoist is in an adjoining room. This is an example of well-guarded machinery. The mines are recognizing at last, and guarding against, the dangers of the power house and shops.

up the empty trip. Another uncouples the cars comprising the load trip and drops them to the trip feeder. The third man is the cager.

Another of the features of the Coverdale plant is the Ilgner-Ward-Leonard hoist installed at the main shaft. Incidentally it is the first of its kind in the Pittsburgh region. The load on the motor of a hoist is extremely variable. An inspection of a characteristic curve of load versus time of the average hoist will show that the load rises rapidly at the beginning of a cycle and then drops off almost as fast to a little less than half the peakload. Here it remains practically constant until the cage or skip reaches the dumping point, when the curve drops down almost vertically. The filled-in outline of this characteristic curve resembles the silhouette of a chair, the top of the chair as the peak load and the seat as the constant load after the hoist has been fully accelerated. If possible, the load should be made more uniform so that the operating company would enjoy the reduced rate allowed by all power companies for operation under fairly constant load. The flywheel motor-generator set has another merit: there are no large losses in the starting rheostat.

The main shaft hoist is driven through single-reduction herringbone gears by an 850-hp. 350-r.p.m. 600-volt shunt-wound direct-current motor. The incoming alternating-current of 2,300 volts coming from the substation drives a slip-ring induction motor, which in turn drives a direct-current generator. On the same shaft is a flywheel and exciter. The motor is fitted with a slip-ring regulator so as to maintain full-load current on the motor at reduced speeds. The generator naturally supplies direct current for the operation of the hoist motor. The control is accomplished by varying the field strength of the exciting current.

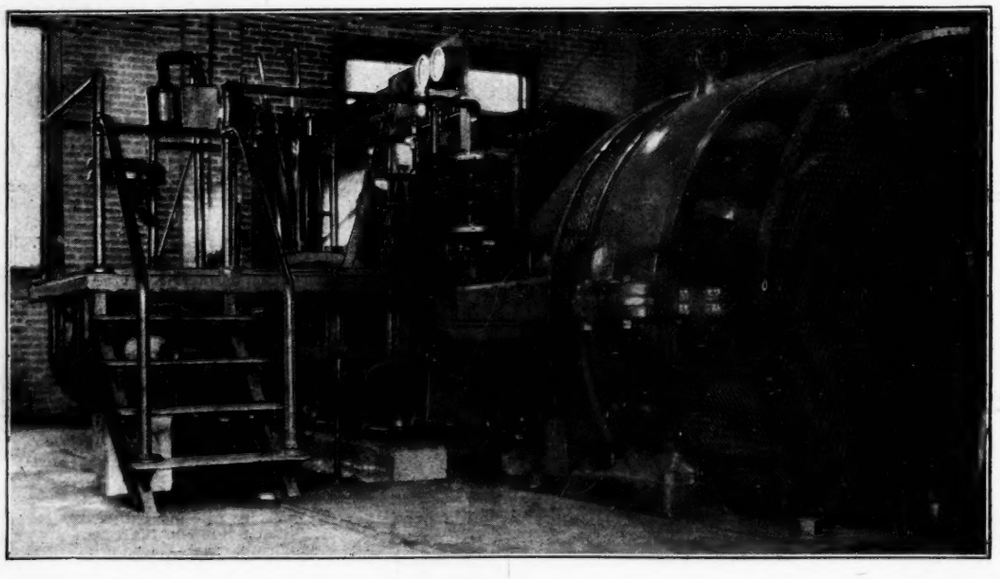
The through shaft of the motor-generator set is mounted on four split pedestal bearings, one on either end of the set and the other two on either side of the 20,000-lb. flywheel. These bearings are lubricated both by gravity feed and oil rings. The flywheel bearings are further cooled by means of circulating water through the cored-out bearing shells. The water supply comes from a deep-well pump, from which comes also the water for drinking purposes and for cooling the slip regulator. This regulator serves also as a liquid rheostat for starting up the set.

Although the company has a power plant of its own, the transmission lines from it are in parallel with

FIG. 10

Hoist Room

This room has no equipment other than the hoist shown and the master controller. All else is in an adjoining room. The hoist motor is an 850-hp. 350-r.p.m. 600-volt shunt-wound direct-current motor. All the needed safety devices are installed on this hoist. It is quite powerful, having to lift a double cage and two cars on every trip.



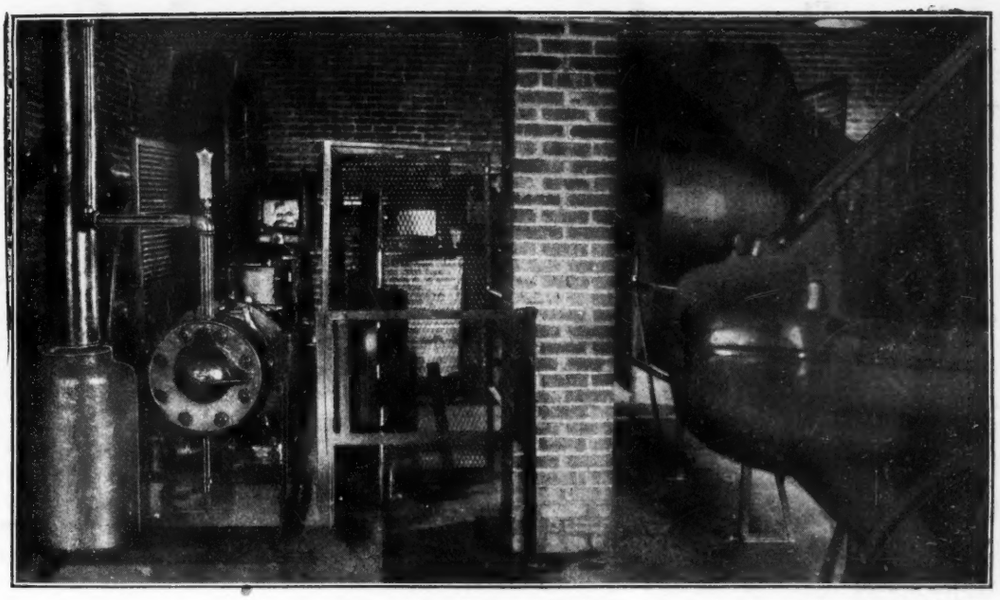


FIG. 11.

Fan House

The 5 x 12-ft. fan is driven by a 200-hp. induction motor. On the left is a fuel-oil engine as a standby in case the two sources of electric supply at this mine should fail. Every effort is made today to avoid the danger of an idle fan. The fuel-oil standby is independent of the company's steam and electrical power as well as of the power from the public-service station.

those of the Duquesne Light Co., to guarantee constant power supply. Thus the two sources of power may be drawn from separately or together. Though the risk of power failure is but slight the 200-hp. induction motor in the fan house is supplemented by an oil engine which stands abreast of the fan shaft, so that an almost instant change can be made in the fan drive by engaging a shaft clutch. C. M. Means, of Pittsburgh, Pa., was the consulting electrical engineer of this plant at the time of its construction.

American Coal Mining Institute Prepares To Answer Members' Knotty Problems

FIFTEEN questions, five papers, a banquet and a trip will occupy the time of the Coal Mining Institute of America during its winter session at Pittsburgh, Pa., Dec. 13, 14 and 15, the technical discussions taking place in the Chamber of Commerce Building and the banquet, in the dining hall at McCreery's store.

On Wednesday, Dec. 13, the meeting will hold its business session at 9 a.m., in which it will cast its vote on the new constitution. This meeting also will be addressed by Silas S. Riddle, chief of the Bureau of Rehabilitation of the Department of Labor and Industry, Harrisburg, Pa., on "Rehabilitation of Injured Mine Employees."

In the afternoon of Wednesday a question-box session, with W. E. Fohl, consulting engineer, as leader, will consider the following questions:

Question No. 1—What is the most important point to be considered when entering a mine after an explosion? (From Pittsburgh, Pa.)

Question No. 2—What are some of the practical remedies for the pollution of our streams by mine water? (From Clarksburg, W. Va.)

Question No. 3—What method should be used in working coal beds 30 ft. or more in thickness, as found in some of our Western states where the roof is only fair and the dip less than 30 deg.? (From Denver, Colo.)

Question No. 4—What electrical methods of shooting explosives in mines are to be preferred? (From Wilmington, Del.)

Question No. 5—What are the most practical methods of preserving mine timber? (From Pueblo, Colo.)

A paper will then be presented by Dr. Yandell Henderson, of Yale University, on "Methods of Resuscitation from Carbon-Monoxide Poisoning."

The annual banquet will be held at 6:30 p.m., at which the speakers will be Douglas Malloch, "The Poet of the Woods," Chicago, Ill.; Dr. E. A. Holbrook, dean of the School of Mines, Pennsylvania State University; and Jack Armour, the humorist from *Coal Age*.

The question box of the next morning will be opened by Jesse K. Johnston, general manager of mines, Bolivar, Pa., the questions being as follows:

Question No. 6—What is the most efficient method for humidifying mine air? (From Pueblo, Colo.)

Question No. 7—What is the solution for the overdevelopment of the bituminous coal industry? (From Philadelphia, Pa.)

Question No. 8—Which is the most efficient timber tie to use in coal mines, hewed or sawed, and why? (From Johnstown, Pa.)

Question No. 9—Are doors necessary in the ventilation of a gaseous mine? (From Pittsburgh, Pa.)

Question No. 10—Would a national danger sign for use in all American coal mines be advantageous? (From Uniontown, Pa.)

At the close of this session David J. Price, engineer in charge of grain-dust explosion investigations, U. S. Department of Agriculture, Washington, D. C., will address the institute on "Industrial Dust Explosions and What Coal Men Can Learn from Them."

Thursday's afternoon session will be presided over by Alexander McCanch, state mine inspector, Monongahela, Pa., and A. C. Callen, dean of the School of Mines, West Virginia University, Morgantown, W. Va., will deliver an address on "Methods of Education in Coal Mining." These questions will then be discussed:

Question No. 11—Why should not all Pennsylvania coal mines, even though self-insured and not insured by the state or an insurance company, be inspected and rated by the Pennsylvania inspection and rating bureau?

Question No. 12—At a drift, or slope, mine where the coal runs from 3 to 4 ft. thick should a rotary dump or a cross-over dump be installed? (From Beaverdale, Pa.)

Question No. 13—Can a wage for mining coal based on the selling price on cars or barges at the mines be devised on which operator and miner can agree? If not, why not? (From Pittsburgh, Pa.)

Question No. 14—Which is the better, the pressed or the welded bond, and why? (From Johnstown, Pa.)

Question No. 15—What is the most effective way of reducing the present appalling rate of fatalities in coal mines from falls of roof and coal? (From Philadelphia, Pa.)

At the conclusion of this paper Bernard J. Reis, expert accountant, New York City, will discuss "Depletion, Depreciation and Other Factors Bearing on Cost."

On Friday a trip will be made by automobile to the power plant and mine of the West Penn Power Co., at Springdale, Pa.

What Hard-Coal Mines Are Doing to Lessen Derailments

Symposium Contributed by Six Leading Anthracite Officials as to Practice at Their Mines in Regard to Tire Repairs, Retracking, Track Revision, Bumper Guards and Other Details of Haulage Management

ASSEMBLED BY D. C. ASHMEAD*
Kingston, Pa.

"WHY are there so many derailments in coal mines? What are engineers and superintendents doing to remedy them? How are locomotive tires maintained?" These are questions agitating many mine executives today. Wrecks should be unusual happenings; instead they are of frequent, and in some mines of daily, occurrence. Three or four or more wrecks occur in some mines every day.

Consequently it was felt that a symposium of practices and experiences from engineers of the anthracite region would be interesting and useful. Several replies were received to a questionnaire regarding the subject. The first letter reveals the same difficulties in the anthracite region as have troubled the bituminous fields.

"Practically no derailments have been caused at our mines as a result of the lessening of the clearance due to the wearing of the tires. It is customary to keep locomotive tires in service till grooves from ⅜ to ¾ in. deep have been worn in them. Then they are turned. As far as I know, no accidents have occurred as a result of the grooving action. No tires have ever come off the wheels during service, but on one or two occasions the wheels have become loose on the axles, but no wrecks resulted.

BUMPER GUARDS DO THEIR WORK WELL

"All our locomotives are equipped with bumper guards, and no accident has arisen from the use of these devices. The switches and frogs of worked-out breasts usually are left in place till they are needed somewhere else.

"As for retrackers, we make them ourselves. They consist of V-shaped pieces of iron that can be laid over the top of the rail. They have a latch point riveted to the top of the V. In some cases factory-made retrackers are used. At a few points guard rails have been laid, but on none of our curves is the rail elevated or braced. In driving a new gangway, or tunnel, the first rails laid are regarded as constituting a permanent track. Sometimes it is lined up and properly ballasted later, but that is unusual.

"Too light a rail is used in the anthracite region. Much of our difficulty in regard to haulage can be traced to that fact. It causes numerous derailments, with consequent loss of time and loosened joints. This injury to joints makes it difficult to keep bonds in condition and is the cause of electrical trouble in the locomotive itself. The vibration and bumping which the light rail causes is injurious to the locomotive."

The electrical engineer of another company could not answer fully all the questions submitted. He replied, however: "Our locomotives are not equipped with tires. We use cast-iron wheels, and so do not have any trouble with tires that come loose. The wheels being of chilled iron, we do not turn them, of course. I would say that they have an average life of from five to six months. The groove on a worn wheel sometimes will cause an accident by catching in the frogs. As to the number of wrecks occasioned by loose wheels I have no information. We protect our locomotive motormen from cars jumping up and crushing them by the use on each end of the locomotive of a pair of the cast-steel bumper blocks."

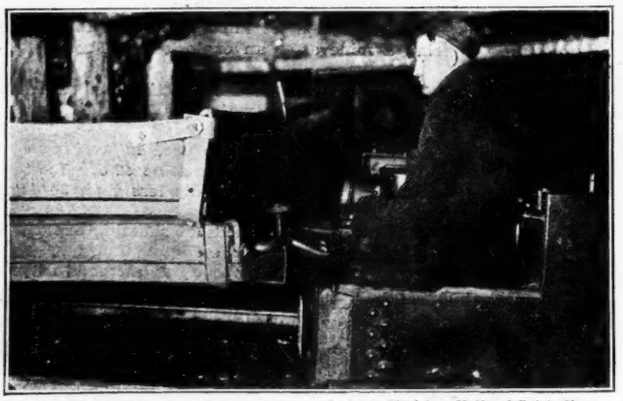
A mechanical engineer of one of the largest independent anthracite companies says:

"There is a tendency to be careless in maintaining the haulage tracks of coal mines in good condition. Yet bad tracks in a mine are not only expensive; they are dangerous, and that is true of either animal or mechanical haulage. The mistakes made in the laying of mine tracks are four: (1) Light rails, (2) light ties spaced too far apart, (3) poor grading, with lack of ballast, and (4) absence of angle bars.

HALF THE ACCIDENTS ARE DUE TO BAD TRACK

"Next to these as causes of haulage accidents comes carelessness in maintenance. Fifty per cent of the haulage accidents are chargeable to bad track. In many mines the track is repaired only after an accident, and then the mine foreman, looking for a cause, finds a worn, loose or broken wheel; usually it is the latter and is caused doubtless by the derailment, but the foreman in his report never blames the track.

"Fifty per cent of the locomotive repairs are traceable to the poor condition of the haulage roads. Guard rails are used at frogs but seldom on curves, where it is customary to elevate the outside rails. Rail benders should be used to make curves. The springing of rails to put a bend in the track is the cause of many derailments and accidents that could be avoided if a rail bender were used. When the rails are not permanently bent but are sprung into place they are held in line



Courtesy National Safety News

BUMPER GUARD KEEPS CAR FROM INJURING DRIVER.
The wheelbase being short in comparison to the length of the car and the change in grade sometimes sharp, it often happens that the bumper of the car tends to rise too high on that of the locomotive—to "lock bumpers," one might say, only that in this case the car does not merely pass its bumper over that of the locomotive but also crowds the locomotive driver against the controller. To avoid this danger, bumper guards are used to keep the car bumper down to a safe level.

*Anthracite Field Editor, *Coal Age*.

under stress, and a passing trip may readily loosen the spikes, with a consequent spreading of the rails and a derailment.

"Many curves in the mines could be greatly improved at little expense by trimming the rib. Make the curves of as long a radius as possible, and you will note a decrease in car repairs that will compensate you for the money expended.

"Accidents caused by loose wheels are few but when combined with those from spread rails will be found to form about 20 per cent of the haulage accidents. When mining is finished the frog and switch for that branch should be removed from the main haulage road, thereby reducing the possibility of a derailment. This is an item seldom overlooked by the foreman, who usually is waiting to transfer the switch to another branch.

"Worn locomotive tires rarely cause accidents but they do greatly increase locomotive repairs and also do much damage to frogs and switches. They should be turned after they have been worn down ⅜ in. Mine-locomotive bumpers should be provided with top guards which should be of sufficient length to prevent the cars from 'climbing' and becoming derailed when being pushed over a summit, thus injuring the motorman by crowding him against the locomotive.

"Derailers of the saddle type and pressed-steel car-replacers are used to retrack derailed cars. Where a locomotive is available derailed loaded cars often are retracked by hitching the coupling to the top of the car and then pulling so as to retrack the hind wheels. The front wheels then are retracked with a short piece of rail placed between the locomotive bumper and the top of the car. This is placed a little out of center. By pushing on the rail the front end of the car is lifted and the front wheels are retracked at the same time. This is a practice which, though successful, frequently damages the car.

Cars May Be Hung Up on Guard Rail

"Guard rails should be protected with wedge-shaped iron or wood blocks to prevent the car couplings from catching the former. This provision increases the safety of employees and reduces equipment repairs.

"No track that is laid nearer to the face than 600 ft. should be of a permanent character or be so regarded, for if it is regarded as impermanent the engineers can establish grades and lay out a track that can be laid properly. Proper clearance spaces should be provided on both sides of haulage roads, and on passing branches room enough to insure safety should be left between cars.

"Ditches across haulage roads never should be left open. A pipe or pipes of sufficient capacity to take care of the drainage should be installed. Clean the roads thoroughly. Coal should not be allowed to accumulate along the tracks. Clean haulage roads not only increase the car yield but prevent accidents.

"Haulage roads should be carefully inspected and all loose roof properly supported or removed. Grade crossovers, heads of slopes, passing branches and all points where transportation men are required to couple and uncouple cars should be well lighted or given a coat of whitewash, preferably both."

An official of one of the largest anthracite companies writes as follows:

"All our locomotives are equipped with solid wheels, shrunk on the axle. The clearance height of the frame of the locomotive above the rail varies from 3¾ to 4 in. Therefore there is no danger of the locomotive rubbing along the rail or the bottom.

"Our locomotives run on 25-lb. rails and the wheels are changed when about a ¼-in. groove is worn in them. They are turned down about once. Our locomotives are not equipped with tires, no accidents having occurred from lack of this provision. I do not know of any instance where a loose wheel has caused an accident.

"Switches and frogs are removed from chamber branches as soon as there is no further use for them. This, of course, makes better main haulage roads and saves the switches and frogs from unnecessary wear.

"Our locomotives are equipped with two safety steel bumpers on the cab end at a height of 14 in. above the locomotive bumpers. The lug is 7½ in. above the bumper. The extension of the lug is 4 in. The width of the safety steel guard is 5 in., the thickness of the steel guard being ½ in. This safety guard prevents a derailed car next to the locomotive, when being pushed or held back, from jumping up into the cab and injuring the motorman. If he uses ordinary care and obeys the company safety rules on speed limits, accidents from this cause should not occur.

Carry Retracker on All Locomotives

"Retrackers are carried on all locomotives. They serve to retrack satisfactorily both locomotives and cars. Jacks and car replacers are used only to retrack a derailed locomotive. When a replacer is carelessly held by hands or feet against the wheel, men are liable to be injured. Sometimes a prop or a tie is placed with one end against the locomotive bumper and the other against the top rail of the mine car for the purpose of lifting the car into place. In this method of retracking, men occasionally are injured. This unsafe method will swing the car to one side, and men have been caught between the car and the rib. Another way of replacing cars on the track is by a lever and blockings. This method also has its dangers.

"Guard rails are used on curves and at frogs. The rails are elevated on the long side of the track and braces are used on the curves when necessary. All rails used in development are taken out and replaced by a well-laid track.

"In only one instance in the last five years has a motorman been killed at our mines by a wreck caused by a runaway trip of cars and motor. This accident resulted from the carelessness of the motorman in charge. He pulled the trip over the summit onto a down grade so fast that the brakeman could not place the required sprags in the trip for its safe control.

"The following are some of the safety rules covering the operation of electric locomotives:

"Safety Rule No. 1—Every motorman must inspect his locomotive before taking it off the pit and he must report its condition on a motorman's inspection blank, giving the date and his signature and depositing the slip at the close of each day's work in a box kept for that purpose.

"Safety Rule No. 4—Motormen must insist that their brakemen and helpers put in sufficient sprags or shoes so that the locomotive and trip of cars are fully under control when running down grades.

"Safety Rule No. 5—Motormen at all times must carry car replacers, jacks and plenty of sand in their locomotives. Jacks and car replacers shall be used only to replace a derailed locomotive.

"Safety Rule No. 9—Motormen must not work their

locomotives if they do not have a good and efficient brake equipment with four brake shoes. Brakes must be in good working order at all times.

"Safety Rule No. 16—Motormen while pulling cars over main roads must not run their locomotives in excess of six miles per hour. When pushing cars the speed should not exceed three miles per hour. When approaching switches and going through doors the speed should not exceed two miles per hour.

"Safety Rule No. 23—Motormen, helpers and brakemen must not place a tie or prop against the bumper of the motor and the top sill of a car as a means of replacing cars on the track. Car replacers must be used and under no circumstances should cars be pushed by a pole.

"Safety Rule No. 24—Motormen, helpers and brakemen must not jump on the front end of a locomotive but must get on from the side. Riding on the front end is strictly forbidden."

The next letter is from another of the large coal companies: "In my opinion the causes of mine-train wrecks with their attendant delays in the day's schedule, their damage to equipment and their injuries to men, though many in number, are principally that the turnouts are too sharp, that lumps of coal or other refuse strew the track, that the rails are poorly aligned and that the tires have become excessively worn. The speed of these trains is such that the mishaps are not serious and usually only the cars are derailed.

"Some locomotives have a clearance as small as 2 in. and even that as the tires wear away would become less, but I have never been able to learn of an accident at our mines where this lack of clearance caused a derailment. It is the common practice to turn wheels as soon as they are worn enough to damage frogs, switches and crossovers seriously. A ¼-in. groove is sufficient to cause much pounding on the track, but nevertheless the tires are more often worn about ⅜ in. before they are turned.

"The tires on electric locomotives usually are turned after six to nine months of service and those on air locomotives are allowed to run without turning for a full year. A badly worn tire is apt to cause a derailment on a sharp curve or at a rail junction.

Prefer to Use Tires Shrunk on the Wheel

"Locomotives rarely lose tires when they are shrunk on. If they should do so, I would ascribe their coming off to faulty installation. We have ceased to use demountable tires on our air locomotives because they worked loose, but no doubt a demountable tire of such design that it would remain tight on the wheel would prove most economical. Particularly is this true of the tires on electrical locomotives.

"I have never known of a wreck being caused by a loose wheel, but of course that could happen from poor workmanship. An occasional inspection of the locomotive should reveal a defect of this sort to the motorman long before an accident occurred. In fact it is hard to see how he would fail to note it even without any careful inspection, so obvious would it be in operation.

"I understand that some locomotives have been equipped with anti-lifting hooks or similar devices to prevent the car next to the motor from being lifted from the track, but not all are so equipped. Almost all locomotives carry a steel retracking casting upon which to run derailed wheels and force them back on the track, using the power of the motor to pull them on the rails. However, should a locomotive entirely leave the track, jacks must be used to replace it on the rail. Levers are frequently used for the retracking of cars and in consequence men are sometimes injured by the falling of coal or the slipping of the lever.

"Guard rails are not extensively used, such as are laid being located at sharp turnouts on main roads and on planes, slopes and other places where their use is warranted. Braces are not used on curves, but the outer rails are elevated, and when a permanent road is laid it is graded and the rails are aligned."

The last letter will be one from an engineer with one of the larger companies who not long ago wrote an article on mine haulage:

"In the anthracite fields of Pennsylvania it is the general practice to keep the road between the rails clear down to the top of the ties. The only chance of rubbing would be from a lump of coal that might fall off the cars, but that would not be sufficient to lift the locomotive far enough from the rails to cause a wreck.

"Our general practice has been to use wheels having cast-iron centers with steel tires 1½ in. thick and wear them down as far as possible and then replace them with new ones, as it is sometimes impossible to turn them, so hard do they become by reason of the arcing from wheel to rail. They are worn down approximately ½ in. before they are removed from the centers. The groove is not allowed to become any deeper because a deep groove injures frogs and switches. When the wheels have grooves they are more liable to be derailed at frogs and switches than those having good treads.

Not Troubled with Loose Tires or Wheels

"As all our tires are shrunk on the wheel centers we have no trouble from loose tires. All cast-iron centers are keyseated and pressed on the axles, and in consequence we have no trouble from loose wheels, but we have had several wrecks from broken axles due to defects in the steel, and these have been overcome by using hammered steel axles instead of cold-rolled steel.

"Whenever the switches and frogs at the necks of breasts are likely to lie idle a long time before second mining will take place, they are removed so that the main line will be in good condition for haulage purposes.

"All locomotives are equipped with guards so as to prevent cars from jumping on top of the locomotive should the latter be derailed, and one general rule provides that when a locomotive is put into service it shall be so placed that the motorman will be at the end away from the loaded trip when coming out to the shaft.

"Each locomotive is equipped with a pair of standard retrackers and roadjack for use in case of derailment. Men are sometimes injured while holding the retrackers in place.

"Guard rails of wood and steel are frequently used on curves, and, as a rule, the rail is elevated to suit the radius of the curve, the rails being well braced at such places."

It will be seen from these six reports that practice varies from company to company. Probably there are no two companies in the anthracite region following the same rules in regard to the avoidance of derailments. Reference is frequently made in this symposium to loose wheels but always as to those on locomotives. The loosened wheel on the mine car is a far more frequent offender and should be, and doubtless is, given due attention by those who fail here to give it any verbal recognition.

Methods of Dry Cleaning and Dust Collecting at the Coal-Concentrating Plant of the American Coal Co.

Of Crane Creek Coal 60 per Cent Passes 2-In., 15 per Cent 1/16-In. Screen—1 x 2-In. Coal Has 22 per Cent Ash, Dust 10 per Cent—Screens Coal to Seven Sizes Before Tabling

AT THE Crane Creek Mine of the American Coal Co. of Allegany County, near McComas, W. Va., a large dry-process coal-cleaning plant is being erected. This will be the second commercial installation of this sort in this country, the first having been made for the St. Louis, Rocky Mountain & Pacific Co. at its Brilliant Mine, near Raton, N. M., this latter plant having just been put in operation with good results.

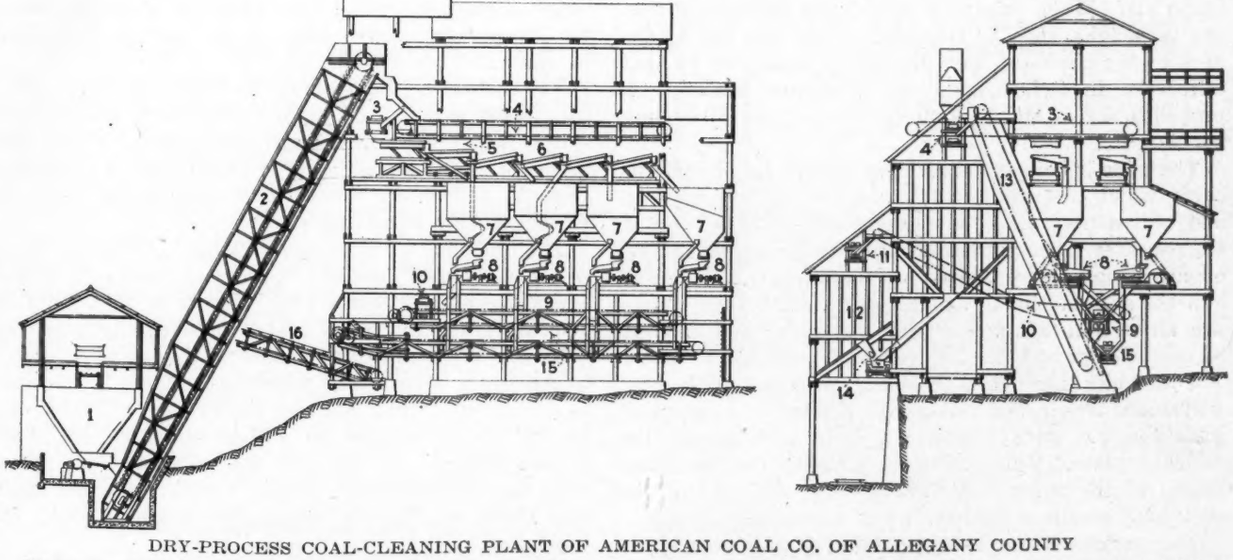
The American Coal Co. of Allegany County formerly operated a wet washery at which it treated all the coal from the Crane Creek Mine that would pass through a 2-in. screen. The results obtained by this method were never quite satisfactory for several reasons, the principal objection being that the coal was wet and in consequence froze and gave trouble during the winter months; that freight had to be paid on the moisture in the coal shipped despite the fact that it had, of course, no commercial value, and that the loss of coal in the process was excessive, particularly in the fine sizes. To these disadvantages should be added the ineffectiveness of the process in reducing the ash content of small sizes.

The coal mined at this property is from the No. 3 Pocahontas seam. This coal, as is well known, is soft and friable, and breaks up badly in mining. Of the mine-run 60 per cent will pass through a 2-in. perforation in the tipple screens, and of this small coal only 75 per cent is retained on a $\frac{1}{16}$-in. perforation. The quantity of coal under 2 in. in diameter to be treated each hour is 240 tons.

At this Crane Creek plant instead of separating the non-combustible or refuse material from the pure coal by water, that separation is accomplished by means of air. The serious problems in successful wet washing, as almost everyone knows, are the recovery of the coal and refuse products from the water, the successful treatment of the finer sizes, the economical use of water and finally the drying of the washed product. All these problems are eliminated by the use of the dry, or air, method of cleaning.

Before erecting this plant the American Coal Co. of Allegany County made tests of their coal at the American Coal Cleaning Corporation's testing plant, located near Welch, W. Va. The tests were conducted over a period of several months and on a number of different samples.

The percentage of ash or non-combustible material in the uncleaned coal, or coal as received from the mine, varies greatly with the size. It will average 22 per cent on sizes which pass a 2-in. and are held on a 1-in. screen. The ash content of the dust, on the other hand, is only 10 per cent. The general average is about 16 per cent. After cleaning, the coal will contain about 5½ per cent ash. The refuse, or rejections, from the coal at the same time will average about 75 per cent ash. The refuse material is comparatively free



DRY-PROCESS COAL-CLEANING PLANT OF AMERICAN COAL CO. OF ALLEGANY COUNTY

(1) Bin in tipple for raw-coal screenings; (2) elevator delivering raw coal to screens; (3) flight conveyor delivering coal from elevator to the two sets of horizontal screens; (4) flight conveyor used as a bypass to distribute coal to the loading bins in case it is not to be cleaned; it also handles clean coal below ¾ in.; (5) horizontal screens for first screening operation having 1½-in. and 1-in. perforations; (6) anti-gravity screens which screen coal and convey it up an incline; they have ¾-in., ½-in., ¼-in., and $\frac{1}{16}$-in. perforations; (7) hoppers of separated coal which feed the table; (8) air tables or pneumatic separators; (9) double-compartment flight conveyor; the upper run carries nut and pea coal separately to another conveyor; the lower run carries all cleaned coal below ¾-in. to the clean coal elevator; (10) double-compartment conveyor for nut and pea coal; (11) double-compartment conveyor for nut-and pea-coal distribution in bins; (12) nut- and pea-coal loading bins; (13) slack elevator for all clean coal below ¾-in.; it delivers to distributing conveyor No. 4; (14) mixing conveyor for clean coal; it mixes part or all of the sizes and delivers to a track loading boom under the tipple; (15) double-compartment flight conveyor; one side carries middlings, the other refuse; (16) conveyor similar to (15) above; it delivers middlings to the raw-coal screening bin No. 1 and refuse to a bin in the tipple.

in the coal and consists of rock, slate and a soft rash.

The plant installation as finally decided upon by the coal company will consist essentially of the following units arranged at different floor levels for convenience in operation. At the top of the building, or upper floor level, will be two batteries of sizing screens, each having a capacity of 120 tons per hour and producing the following sizes:

SCREEN SIZES FOR DRY WASHING

Through 2 in. and over 1½ in.
Through 1½ in. and over 1 in.
Through 1 in. and over ½ in.
Through ½ in. and over ¼ in.
Through ¼ in. and over ⅛ in.
Through ⅛ in. and over 1/16 in.
Through 1/16 in.

These screens will have not only a shaking motion but the screen decks will be vibrated as well, this latter action being accomplished by means of pneumatic vibrators. Each size of coal as produced will be conducted by chutes to bins in the structure below, which supply a steady feed of coal to the pneumatic separators.

The plant will contain eight of these arranged on a floor level immediately below the above-mentioned supply bins. Each of these machines will treat a single one of the above sizes except in the case of the two smaller sizes, for which two additional machines will be installed. It has been recently demonstrated by tests that the pneumatic separator will easily treat 25 tons an hour of the coarser coal and 12 to 14 tons per hour of the smallest sizes. It should be noted here that the coal finer than 1/16 in. will not be treated in the American plant, arrangements having been made to mix this with the clean coal delivered from the separators.

How Coal Is Separated from Refuse

For the benefit of those readers who are unfamiliar with the pneumatic coal separator a brief description of the appliance is here given: On this machine, air—the weight of which is 1/800th that of water—is used as the floating medium. The separation is made by taking advantage of the difference in the weight of materials. When mixtures containing particles differing in weight, such as coal and refuse, are fed to the deck of the machine, each product is separated by that difference in weight, and the separated material is propelled across the deck surface to suitable discharge spouts.

The table is hollow and airtight, except for the porous cover which distributes the air through the deck load and causes the partial suspension and stratification of the particles. The porosity of the deck and the quantity of air supplied are varied in the different tables to suit the size and kind of material treated. Deck covers are all of punched metal plate, the size and spacing of the holes governing the degree of porosity.

The tables for coarse coal are provided with ¼-in. galvanized iron riffles nailed over a sheet of large-mesh (about ⅜-in.) wire screen, which in turn covers the punched plate. This screening adds to the retarding action of the riffles and prevents the back-slip of the deck load on the return stroke of the table.

The action of the table on large sizes (over about ¼ in.) is improved by banking up the refuse by means of "banking bars" or baffles and keeping it on the table until it reaches the discharge edge. This banking causes a sharper line of demarcation between the refuse and the coal and also prevents pieces of coal from riding on top of the refuse into the refuse compartment. This tendency is prevented also by a current of air through one of the banking bars which blows back into the coal zone coal that may be riding the refuse.

Inside the deck and supporting the cover are strips of wood immediately underneath the riffles and parallel to them. These strips assist in the distribution of the air and also furnish support for the perforated zinc cover.

Sometimes for the finer materials, strips of paper, called "retarding strips," are placed under the cover between the supporting strips. These retarding strips are wider at the fan end of the table and taper to a point at from one-half to two-thirds the distance to the concentrate end. They provide quiet zones between the riffles in which undersized particles of heavy material may be advanced into the concentrate when the feed is not accurately sized. These would be of advantage in coal cleaning for removing fine pyrite from the smaller sizes of feed.

Each Table Provided with Centrifugal Fan

Air baffles are provided within the deck to provide for the proper distribution of the air through the coal and refuse deck load.

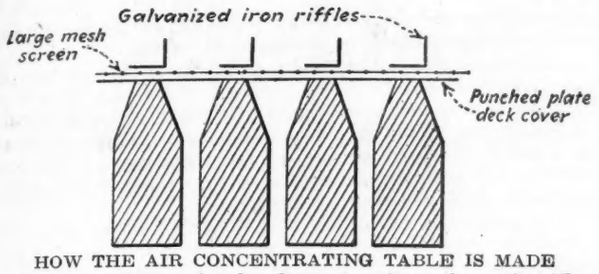
Air for pneumatic separation is provided by a centrifugal fan built integral into the frame of the table. A flexible connection of heavy canvas joins the fan duct to the wind box, or deck, thus allowing for the motion of the table. A shutter over the intake of the fan adjusts the quantity of air which the deck receives.

The longitudinal and side slopes of the deck are adjustable, and both must be set accurately at the proper angles if the best results are to be obtained. The head motion of the table is a simple eccentric, the speed of the vibrations being adjustable through the medium of cone pulleys. The line of motion of the deck crosses the deck proper, due to the angular supports, so that as the deck advances in its stroke, it also lifts. On the return stroke of the eccentric the deck recedes and drops. This combination of motions advances the material toward the refuse end against the longitudinal slope while the lighter particles roll down the steeper transverse slope under partial suspension by the air.

The various adjustments of the table affect each other to a large extent, but there undoubtedly is a certain setting which for any size and any proportion of refuse will give the best results. The feeder also is adjustable so as to get the maximum tonnage over the table for various refuse percentages.

The pneumatic separators in the American plant will make three products, viz: clean coal and refuse and a middlings product that consists of an admixture of coal, refuse and boney coal. These products as they leave the separators are conducted by suitable spouts to conveyors below. The middlings product is conveyed to the elevator which delivers the raw or untreated coal to the sizing screens to which reference has been already made. In this way the middlings are mixed with the untreated coal coming to the plant and again find their way to the separators properly sized for treatment.

The final products made by the plant are only two, viz: clean coal and refuse. The various sizes of cleaned coal from the separators are combined and put into the shipping bins as nut, pea and slack, or any combination of these sizes. The refuse is conveyed to a bin in the tipple adjacent to the dry-cleaning plant, from which it is dumped together with mine rock and



HOW THE AIR CONCENTRATING TABLE IS MADE
Strips of wood are placed underneath and parallel to the riffles. Over these strips are quiet zones on which particles accumulate.

refuse picked from the picking table in the tipple. A further provision has been made in the plant for combining clean coal from the dry-cleaning plant with prepared sizes from the tipple, thus permitting the shipment of cleaned and picked mine-run or any other desired mixture.

An interesting feature of the plant is the means provided for collecting the dust produced by the operation of the various elevators and conveyors, the sizing screens and the pneumatic separators. (This dust-collecting system was furnished by the Clerk Dust Collecting Co., of Chicago.) Dust-collecting hoods are placed at all points where there is any possibility that dust will arise. These hoods are terminals of suitable pipes, which are connected in a continuous system to an exhaust fan and separating and collecting apparatus. The collected dust is delivered through a pipe to the conveyors which carry the slack size to the shipping bins, or it can be marketed separately as powdered fuel.

As will be noted in the illustration, the plant will consist essentially of three floor levels, viz.: the screening floor, the separator floor, and the lower floor, in the last of which will be placed the conveyors and the coal- and refuse-collecting equipment. The present wet-washing building will be remodeled to contain the new system. All equipment in the American plant will be electrically operated. Machines throughout will be direct-connected. In general the motors are of the slip-ring type and are controlled by push-button start and stop stations. The controls for the motors in the dry-cleaning plant are interlocked on the same principle as in the tipple, so that one motor in a group cannot be started in such a way as to cause material to be conveyed where it will block up the continuous flow. A master push button is provided that will start up the motors in a certain group in the correct order. All of the motors and the control equipment are of the Westinghouse type.

The dry-cleaning plant was designed and is being built by the Roberts & Schaefer Co., of Chicago. The screens and pneumatic separators are being manufactured by Sutton, Steele & Steele, Inc., of Dallas, Tex., under patents controlled by the American Coal Cleaning Corporation, of Welch, W. Va.

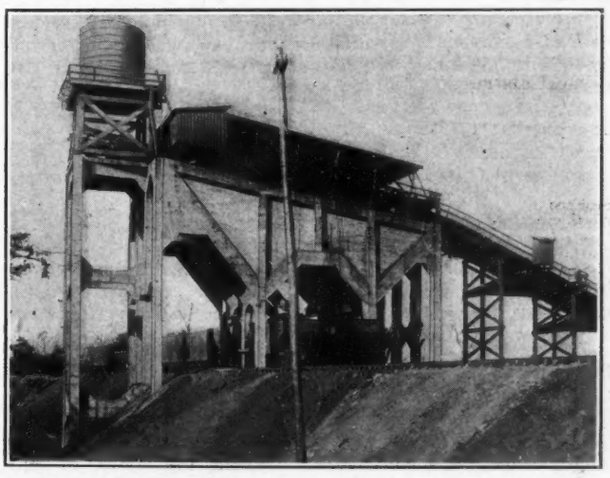
Trip Runs Wild on Slope, Cuts Conductor; Dust Ignites and Eighty-Six Die

EXCEPT in the number of dead the accident at Dolomite mine No. 3 of the Woodward Iron Co., Dolomite, Ala., that occurred in the afternoon of Nov. 22, is a double apparently of that at the Monongah mine of the Fairmont Coal Co. (now the Consolidation Coal Co.), in West Virginia. In that misfortune 361 men were killed. In both accidents a runaway trip apparently tore down an electric conductor and caused an explosion.

At the Dolomte plant the number killed was 86 and the number injured 59. Later reports may show that the loss is even greater than that stated owing to deaths of some of those now reported as injured. It appears that four cars had just been discharged on the revolving dump (which has capacity for five cars and is inclined on a slope of 15 deg.), when they broke loose, plunging headlong down the 30-deg. grade which leads 880 ft. into the mine, of which about 600 ft. is on the surface. It is easy to realize with what violence the trip reached the bottom. It must have been smashed to fragments. It appears likely that an electrical conductor of some kind—possibly a high-tension line—was torn down and that the short-circuit resulted in a conflagration of dust of such severity that flames are said to have shot up the slope several feet into the air and set fire to woodwork on the top of the tipple, reducing it to ashes. It is said that of all the men around the foot of the slope only one man still remains alive. In this section it seems that the concussion was severe but it is interesting to note a story that on some of the dead calcium carbide lamps were found to be still burning. All the foremen, of whom there were six, were killed.

A number of the victims succumbed to afterdamp. M. D. Wilson, who was seriously injured, relates that he succeeded in getting out by wrapping his woolen shirt about his head after dipping it in a bucket of water. This probably is a protection not against carbon monoxide but against the hydro-carbon constituents of afterdamp that have such a harmful effect. He asserts, however, that he supposes that this precaution kept his face from being burned.

At the time of the accident 475 men were in the mine. Of the 86 men killed, 21 were white and 65 were negroes. Three of the men were alive when removed from the mine but died later. According to the last report of the state mine inspector the mine generates gas, but sufficient fan ventilation and other safety provisions were maintained to cause the mine to be regarded as safe. Gas was not a factor in the explosion, for this slope is the main intake.



WHERE CARS BROKE AWAY, KILLING EIGHTY-SIX MEN
The cars at the close of their wild flight down the incline apparently dragged down an electric conductor, which in turn set fire to and exploded the dust of the roadway, the flame swirling up the slope as from an inferno and consuming the headhouse.

Labor's Opinion of Wages in the British Coal Industry

Statement by Frank Hodges, Secretary Miners' Federation

For the sixteen months since the termination of the great lockout the financial situation in the trade has been submitted to the owners and workmen by their joint accountants. Much more is known, therefore, within the trade about proceeds, wages, profits, and costs of production than ever before. From a study of the ascertained facts it is mutually admitted that the coal-mining industry is, and has been, passing through a period of adversity unparalleled in the annals of the trade. There have been unprecedented losses, both in wages and in profits. So much is this the case that the industry is on the verge of collapse. During the whole of this period the workmen and the owners have shared the common adversity in the proportions and in the manner laid down in the terms of the agreement of July, 1921.

The wages of the men have been reduced from the end of the "temporary period," i. e., September, 1921 (during which the government rendered the industry some assistance), by almost unbelievable amounts. This is best illustrated by taking the wage of a minimum wage coal getter in October, 1921, and comparing it with October, 1922. The reduction in the amount per day will give an idea of what the workmen have suffered:

	Wage per Day Oct. 1921 s. d.	Oct. 1922 s. d.	Decrease Per Cent
Bristol	10. 6	7. 2	32
Cumberland	9. 5	8. 3	12
Derbyshire	19. 2	11. 1	42
Durham	14. 0	8. 7	39
Forest of Dean	9.10	7. 5	25
Kent	14. 3	10. 4	27
Lancashire	15.10	9.10	36
Leicester	17. 1	9.11	42
Cannock	17. 1	9.11	42
Warwickshire	16.10	9. 9	42
Northumberland	16. 2	9.11	38
North Wales	12. 5	8. 5	32
Nottingham	19.10	11. 6	42
North Staffs	13. 9	8. 7	38
Scotland	13.10	8. 5	39
Somerset	12. 3	7. 0	43
South Derby	15. 7	9. 0	42
South Wales	12. 4	8.10	28
West Yorkshire	15. 7	9. 0	42
East Yorkshire	16.10	9. 9	42
South Yorkshire	17. 5	10. 1	42

The workmen are making a demand for a living wage or at least a wage comparable with the pre-war wage. How the present position compares with that in 1914 is shown in the following table. It sets out the average wage per manshift worked in June, 1914, and for August, 1922, in the seven large districts in the country. The figures represent the estimates of the average wage of all classes of persons engaged in the mines, excluding the clerical staff, managerial and administrative salaries and wages. The increase above the 1914 nominal wage is shown both in money and as a percentage, whilst the decrease below the actual cost of living today is also shown as a percentage in the several districts:

	Average Daily Wage June, 1914 s. d.	August, 1922 s. d.	Increase, Per Cent	Decrease Below Cost of Living, Per Cent
Scotland	6 8.88	9 2.55	36.68	42.32
Northumberland	6 2.17	8 1.59	31.57	47.43
Durham	6 2.55	8 10.29	42.57	36.43
South Wales and South Monmouth	6 9.22	9 7.05	41.65	37.35
Western Division	6 7.75	9 5.85	44.24	34.86
Lancashire, North Staffordshire and Cheshire	6 0.33	8 3.94	38.17	40.83
North Wales	5 10.04	7 10.64	35.13	43.88

The average wage, therefore, is about 40 per cent above the 1914 wage. This wage is not being paid for the first time this month or last month. In South Wales, South Staffordshire and Salop, Cumberland, Forest of Dean, Newbury and Kent there has been no upward movement in wages since December, 1921. During the whole of this period the workmen in those areas have been living at a point far below the cost-of-living level. The public will understand that a great basic industry, such as coal mining, cannot continue indefinitely in production with a million of its workmen and their families receiving an income 40 per cent and more below the standard of living.

The reason for this unhappy situation is that at the pit mouth the revenue from the proceeds of the sale of coal is not adequate to meet the cost of production at the pit. Cost of production should involve a living wage for the men and a reasonable return on capital for the owners. But the revenue has not provided even a poverty wage, whilst many collieries have gone out of production.

The miners do not desire a stoppage of work. They do not desire even to increase prices at the pit. But it is impossible to resist famine conditions much longer. The men are working up to the maximum of their physical ability. They are giving the country all the coal it requires. They have re-established the export market. The country cannot absorb all the coal which could be produced if employment were regular. All those things have been accomplished at the expense of profit, it is true, but principally through the sheer poverty of the men and the suffering of their families, who have endured it in the hope of a later recovery. This hope has been shattered.

Wages Paid Machine Miners, Runners and Helpers in West Virginia

(Year Ended June 30, 1921)

	Machine Miners Paid For		Machine Runners		Machine Helpers	
County	Per Car	Per Ton	Wages	Paid By	Wages	Paid By
Barbour	$0.94	$0.61	$0.14	Per Car	$0.13	Per Car
	.....	.....	.11	Per Ton	.11	Per Ton
	.....	.60	.12	Per Car	.12	Per Car
Boone	.....	.....	.10	Per Ton	.10	Per Ton
	.....	.....	5.37	Per Day	4.96	Per Day
Braxton	1.37	.....	.34	Per Car	.32	Per Car
	.....	.....	5.26	Per Day	5.26	Per Day
Brooke	.87	.75	.11	Per Ton	.10	Per Ton
	.....	.....	5.70	Per Day	5.70	Per Day
Clay	1.27	.68	.12	Per Ton	.10	Per Ton
	.....	.....	6.08	Per Day	5.86	Per Day
Fayette	1.08	.67	.16	Per Car	.15	Per Car
	.....	.....	.11	Per Ton	.10	Per Ton
	.....	.....	5.81	Per Day	5.24	Per Day
Gilmer	1.11	.70	.15	Per Car	.15	Per Car
	.....	.....	.11	Per Ton	.10	Per Ton
	.....	.....	5.30	Per Day	5.21	Per Day
Grant	1.46	.73	6.07	Per Day	5.89	Per Day
Harrison	.98	.75	.19	Per Car	.18	Per Car
	.....	.....	.14	Per Ton	.14	Per Ton
	.....	.....	6.23	Per Day	6.11	Per Day
Kanawha	.....	.68	.13	Per Ton	.12	Per Ton
	.....	.....	5.55	Per Day	5.39	Per Day
Lincoln	1.01	.63	.13	Per Ton	.13	Per Ton
	.....	.....	5.41	Per Day	5.14	Per Day
	.98	.67	.16	Per Car	.16	Per Car
Logan	.....	.....	.14	Per Ton	.14	Per Car
	.....	.....	6.22	Per Day	5.91	Per Day
	1.07	.66	.24	Per Car	.22	Per Car
Marion	.....	.....	.13	Per Ton	.09	Per Ton
	.....	.....	6.42	Per Day	6.11	Per Day
Marshall	.....	.68	.11	Per Ton	.11	Per Ton
Mason	.....	.68	.14	Per Ton	.14	Per Ton
	1.23	.64	.22	Per Car	.18	Per Car
McDowell	.....	.....	.12	Per Ton	.08	Per Ton
	.....	.....	5.41	Per Day	4.94	Per Day
Mercer	1.39	.67	.20	Per Car	.18	Per Car
	.....	.....	5.72	Per Day	4.93	Per Day
Mineral	.94	.94	.11	Per Ton	.11	Per Ton
	.....	.....	6.08	Per Day	5.84	Per Day
Mingo	.95	.58	.19	Per Car	.10	Per Car
	.....	.....	6.13	Per Day	5.92	Per Day
	1.12	.67	.20	Per Car	.18	Per Car
Monongalia	.....	.....	.08	Per Ton	.07	Per Ton
	.....	.....	6.48	Per Day	6.01	Per Day
Nicholas	1.04	.66	5.31	Per Day	5.14	Per Day
	.87	.68	.14	Per Car	.14	Per Car
Ohio	.....	.....	.11	Per Ton	.11	Per Ton
	.....	.....	5.52	Per Day	5.10	Per Day
Preston	.82	.70	.24	Per Car	.24	Per Car
	.....	.....	.16	Per Ton	.15	Per Ton
	1.04	.63	.17	Per Car	.13	Per Car
Raleigh	.....	.....	.12	Per Ton	.12	Per Ton
	.....	.....	5.66	Per Day	5.30	Per Day
Randolph	1.26	.65	.21	Per Car	.21	Per Car
Taylor	.86	.58	.19	Per Car	.19	Per Car
	.....	.....	.12	Per Ton	.11	Per Ton
Tucker	1.43	.99	.....	.....	.....	.....
Upshur	.81	.64	.15	Per Car	.13	Per Car
	.....	.....	5.60	Per Day	4.77	Per Day
Wayne	.....	.77	.....	.....	.....	.....
Wyoming	1.05	.64	.15	Per Car	.08	Per Car
	.....	.....	5.62	Per Day	5.43	Per Day
Averages	$1.08	$0.69	$0.19	Per Car	$0.17	Per Car
	.....	.....	.12	Per Ton	.11	Per Ton
	.....	.....	5.77	Per Day	5.46	Per Day

THE FRENCH ARE TRYING out a new fuel composed of a mixture of alcohol and gasoline. We predict now it won't work. Experiments in this country have proved it is too dangerous.—*Philadelphia Inquirer.*

Problems of Operating Men

Edited by James T. Beard

Dead-Ending the Trolley Wire in Mines

Danger When Dead-End Is Carried too Close to Face of Heading—Keep Dead-End Fifty Yards Back—Improved Wire Splicers — Ohio Law Forbids Wire in Rooms

SOME time ago, I recall, the question was raised in *Coal Age* as to how near the dead-end of a trolley wire should be allowed to approach the face of a heading. (Vol. 17, p. 367.) An interesting discussion followed this inquiry. I believe the general opinion expressed was that the trolley wire should not be carried closer to the face of a heading than the last open crosscut.

For several years, I was in charge of work where trolley locomotives were in use. The mine generated no gas and I followed the practice of never permitting the trolley wire to be extended beyond the outby corner of the last crosscut.

Later, when in charge of a large mine where gathering locomotives were employed and the mine generated considerable gas, I made it a rule not to extend a trolley wire beyond the last room that had an open crosscut, on any entry. In making this the invariable rule in that mine, we took no chances on the ignition of gas through the breaking down of a trolley wire by a fall of roof.

No doubt some of the good readers of *Coal Age* will think that this was an unnecessary precaution; but we were keeping on the safe side, since falls of slate were of frequent occurrence between the last room having an open crosscut and the head of the entry. My fear was that such a fall might knock down the trolley wire and this, coming in contact with the rails, would produce fireworks that would ignite any gas present.

Plan Adopted to Avoid Frequent Splicing of Trolley Wire

Allow me, here, to describe what I consider a good scheme to adopt when driving entries from which rooms are being turned. The plan is to keep on hand two 50-yd. lengths of trolley wire. Then, as the face of the heading is advanced and the gathering locomotive approaches the limit of its reel in reaching the face, attach one of the 50-yd. lengths to the main trolley wire. This will enable the locomotive to proceed another 50 yd., as the heading continues to advance.

When the limit of the reel is again reached, attach the end of the second 50-yd. length to the first, which will permit of another 50-yd. advance of the heading. Now, when that point is reached, replace the two 50-yd. lengths with, say 100 yd. of trolley wire, splicing this permanently to the main wire.

Splicing the Trolley Wire

In attaching the two 50-yd. lengths when following out this plan, a form of trolley wire splicer similar to that shown in the accompanying figure should be used. The splicer shown in the figure is manufactured by the Ohio Brass Co., Mansfield, O. The bottom

IMPROVED FORM OF SPLICER

of the splicer is arranged to give an even run for the trolley wheel and avoid bumps.

On the left end of this splicer, the open lips are shown permitting the ready insertion of the trolley wire, after which these lips are pounded down and fit snugly against the wire, as shown on the right-hand end of the splicer.

In this type of splicer, the wires are held in position by steel chucks, serrated on the inside so as to give a strong grip to the wire. On the outside, these chucks are tapered to fit into a tapered hole in the splicer, into which they are driven after the wire is in place.

In another type of splicer furnished by the same company and adapted to a heavier tension on the wires, the latter are held in place by set screws. Either of these forms of splicer are easily adjusted and readily disconnected when desired.

Advantage of 500-Ft. Extension

A considerable advantage will be gained, in the reduction of the number of permanent splices required in the main wire, if a 500-ft. length of wire be used to replace the two 50-yd. lengths when the locomotive has reached its limit on the addition of the second length.

This 500-ft. extension of the trolley wire will not approach the face closer than 100 ft. and will enable the locomotive to operate (assuming a 300-ft. reel) while the heading is being advanced 200 ft., when it will again be necessary to make use of one of the 50-yd. lengths and proceed as before.

In the previous discussion to which I have referred, mention was made of the Ohio law (Sec. 947) forbidding the extension of a trolley wire into a room that is being worked. I fail to see the practical application of this restriction in the Ohio law.

There are numerous instances, in mining practice, where rooms are worked in groups and, to avoid keeping up the roads in each room, switches are laid through the last inby crosscut and all the coal taken out through a central room of the group.

Saves Extra Trackage in Four Rooms

For instance, assume five rooms are being driven in a group. When these have reached the second crosscut, switches are laid in No.-3 room and cross-tracks extended to the right and left through the crosscuts, to enable all the coal from the five rooms to be taken out through No.-3 room. The scheme saves the extra trackage in four of these rooms. In such cases, I have known the trolley wire to be extended into No.-3 room; but this would not be permitted under the Ohio law. I hope to hear from others on this matter.

Ostel Bullock.

Central City, Ky.

Some Points Relating to Use of Safety Lamps

Bent standards in a safety lamp a cause of glass breaking when lamp becomes heated—Careless methods of making tests for gas — Electric cap lamps should not be carried by firebosses.

WHEN reading over the several letters that have been written regarding the testing and use of safety lamps, a few points suggest themselves that, I believe, have not been mentioned and yet have an important bearing on safe practice. It would be interesting to see these points further discussed, by the readers of *Coal Age*.

First, a matter of considerable importance, in the examination of a safety lamp to ascertain that it is in condition to be taken into a mine and exposed to gas, is to observe that the lamp standards are not bent or shortened, in any way, but are straight and of equal length.

This may seem an unimportant matter and scarcely worthy of attention, except as we reflect on the fact that any bending of the lamp standards will make some of them shorter than others and cause an undue strain to be thrown on the glass when the lamp becomes heated by exposure to gas.

The same is true if the standards of a lamp are not all of the same height, which may occur as a defect in the manufacture of the lamp. On one occasion, I saw a lamp glass break, owing to the standards having been slightly bent by rough usage in the mine. Fortunately, however, this occurred when the lamp was not exposed to an explosive mixture.

It is my belief that mine officials, as a rule, are not sufficiently particular in respect to the use and care of safety lamps by the men in their employ. Many officials seem heedless or, at least, lack a proper regard for the safe handling and inspection of safety lamps used in their mines.

How often do we observe assistant foremen and firebosses; yes, and foremen and superintendents also, for that matter, traveling about the mine and carrying a lamp having one side of the glass covered with soot. We must naturally conclude that if the glass is dirty the gauze is also dirty and the lamp for that reason unsafe. Yet, there are hundreds of lamps used every day in that condition.

Examine Mines with Electric Cap Lamp on the Head

Another point has been suggested to my mind by a remark that W. H. Luxton made in his letter, *Coal Age*, Oct. 12, p. 594. Mr. Luxton stated, "Present-day practice, with a large number of our firebosses, is to carry an electric lamp in their cap."

Possibly, I am out of date in contending that any official whose duties require him to test for gas in the mine should carry no other lamp than an approved testing lamp. I am fully aware that many officials will claim that the extra lamp facilitates the examination of the roof. In my own experience, I have not found this to be the case. To my mind, it would be an indication of old age and incapacity for the work, not to be able to see a crack if one exists in the roof.

With only the light of my Wolf safety lamp, I have run a surveyor's transit and read the vernier to single minutes, with very little trouble. There can be no denying the fact that it is practically impossible to make an accurate test for gas with a safety lamp and, at the same time, have an electric lamp on one's head. If any one thinks it can be done, let him try it.

Making Accurate Test in Return Air Current Difficult

In making this statement, I do not refer to testing a pocket of gas accumulated in a cavity of the roof or other close place. I mean that it is practically impossible to make the test in a return air current, for determining low percentages of gas in the air traveling. This is more important than testing for isolated bodies of gas.

The only exception I would make, in my former statement, is that a man should carry a small flashlight when he has to examine falls, or climb steep chutes. The flashlight will enable him to reach a place of safety in case he should lose the light in his safety lamp.

A testing lamp is a poor tool at the best, and my observations prove that when a man has a cap lamp along he gives less attention to his safety lamp, which often hangs at his belt, swinging and bumping at every step. If mine officials were taught to give the same care to their lamps as a soldier must give to his rifle, there would be fewer unexplained failures of standard testing lamps.

O. G. SHARRER.

Kent, Pa.

Using Steel Tamping Bars

Overestimating the danger—Accidents from this cause not common in Tennessee mines—Charging powder in paper cartridges — Practice when drilling with worn augers.

IN HIS ARTICLE, "Charging Holes With Steel-Headed Tamping Bars," *Coal Age*, Oct. 19, p. 637, my friend and neighbor, Oscar H. Jones, appears to be overexercised, in reference to the use of steel bars for tamping holes in blasting.

It appears that Mr. Jones regards this practice as having grown to a considerable extent in his district. He explains that the coal, in that locality, contains much sulphur in the form of balls and streaks, which is troublesome in drilling the holes for blasting.

When a drill strikes a sulphur ball, the latter being very hard, deflects the drill slightly. The result is that the hole is not straight and the sulphur ball is left exposed in the side of the hole, which our friend regards as very dangerous if a steel-headed bar is used to tamp the charge.

Danger of Striking Spark When Steel Bar Hits Sulphur Ball

Continuing, Mr. Jones claims that when such a hole is tamped with a steel-headed bar, there is every chance of the bar striking a spark when coming in contact with the sulphur ball. In that case, he considers an explosion of the charge almost inevitable and adds, "Such accidents are common in our mines, although they are wholly avoidable if proper precautions are taken and steel tamping bars prohibited."

While I do not wish to be understood as approving the use of steel tamping bars, it appears to me that the danger is not as great as Mr. Jones would have us believe. In other words, a premature explosion is not an inevitable result, though always a possible one.

Consider, for a moment, the method ordinarily followed by a miner when charging a hole. The powder is first placed in a cartridge made of strong blasting paper. After inserting the fuse, the miner either ties the mouth of the cartridge tight about it, or doubles the paper back and presses it down in a way to prevent the fuse from being pulled out easily.

This being done, the cartridge is pushed back gently to the bottom of the hole. No miner, having any regard for his own safety would push a cartridge back hard enough to strike a spark, by his bar coming in contact with the sulphur ball. But, suppose that did happen, the paper of the cartride would still intervene between the spark and the powder.

When tamping a hole with coal slack or clay, most miners make a short cartridge, 8 or 10 in. long, called a "dummy," or "dooly." This cartridge is filled with the tamping material and pushed back against the powder before any hard tamping is done. After the dummy is in place, no spark caused by the hard tamping of the charge could possibly reach the powder.

In respect to the material used in tamping a hole, I agree fully with my friend that clay or some other incombustible material should be used, especially if the charge consists of black powder. In my opinion, black powder should not be permitted to be used in many of our mines.

Use of Two Cartridge Pins When Bit Becomes Worn

In the same letter, Mr. Jones speaks of the auger bit becoming so worn that the hole drilled is too small to permit the cartridge to be pushed safely to the bottom of the hole. To say the least, I believe that any attempt to force a cartridge into a small hole would be reckless and particularly dangerous where the coal contains much hard sulphur, in the form of balls or streaks.

It is now several years since I have dug any coal; but, at that time, we kept two cartridge pins, a large pin and a smaller one for use should the auger become worn. This avoided the trouble and danger of bursting a cartridge.

Every miner, also, kept a scraper made of soft iron and having a small spoon at one end and a larger one at the other. These scrapers were used to clean the holes of dust and, at times, miners would use the big-spoon end to push some loose powder back into the hole. I have known a few reckless miners to get their cartridge fastened in the hole so that they could neither push it forward nor pull it back.

Should Not Tamp Holes Too Hard

In that case, the miner would generally tamp the hole and fire the shot. Frequently, the shot would pull its burden very well and no harm would result. However, I consider there is much risk in such a practice and believe it should not be allowed. Just here, let me say that many miners tamp their holes too hard—much harder than necessary. At times, you will hear the tamping bar ring as though it was striking hard coal. In my own practice, I have never tamped shots in that way and have always had good success in shooting.

Speaking of the common occurrence of accidents resulting from the use of steel bars in tamping, allow me to state that during the thirty-five years of my connection with mining in Tennessee, it

has not been my experience to see or hear of such an accident occurring in our mines. For four years, beginning June 1, 1910, I was district mine inspector, and my territory included the Wilder mine, where Mr. Jones is employed.

Every week I see and talk with the present inspector in that district. Yet, he has not mentioned such an accident as having occurred and I cannot think that accidents of that nature are frequent. It will be interesting to hear from others on this point.

JOHN ROSE,
Former District Mine Inspector.
Dayton, Tenn.

Industrial Peace via Golden Rule

Remedy for existing ills lies within reach of everyone—Practice of the Golden Rule the need of today.

WITH deep interest, I read the excellent letter of John Rose, which appeared in *Coal Age*, Nov. 2, p. 719, under the heading "Finding the Way to Industrial Peace." The remarks of Mr. Rose emphasized the present-day need of more religion in our industrial relations, one with another.

To say that I am in hearty accord with the sentiments expressed is putting it feebly. It is my belief that the practice of every-day religion is the only solution to the problems that now confront us on every hand.

It is not in coal mining alone that this need prevails, but in every industry throughout the length and breadth of the land. Operators and miners, employers of labor and workers in every trade and occupation must get together and co-operate if we are to secure the peace that is so much desired. Hard as the fact may be to realize, the remedy is within the reach of everyone. To my mind, no good results will be accomplished until we come to regard the work as beginning with ourselves.

WHERE RESPONSIBILITY RESTS

It is for the profiteering merchant who asks high prices for his goods; for the operator greedy for an unreasonable profit; for the capitalist demanding unreasonable returns on his investment; for the miner, day laborer, and other workers asking higher wages and making unfair demands respecting their labor—on all of these alike rests the responsibility of doing their share in the practice of the Golden Rule.

We might go on forever naming things that contribute to the high cost of living; but nothing will be accomplished that will be of benefit, until each one regards the problem as his own and is willing to do his share to make the world better.

This would be a wonderful world in which to live, if such a wave were to sweep the country and the chief endeavor of everyone was to treat another as he would be treated. There would then be an end to all industrial strife and prosperity would follow.

JAMES THOMPSON.
Mayport, Pa.

Inquiries Of General Interest

By-Products in the Manufacture of Coke

Numerous By-Products in the Manufacture of Coke—Skill and Knowledge Required to Insure Success—Principal Types of Ovens in Use

KINDLY permit me to ask for information, through the columns of *Coal Age*, regarding the by-products obtainable in the manufacture of coke. Also, does the bituminous coal used require to be of good quality, and does the recovery of these by-products require special skill and treatment?

Frontier, Wyo. INQUIRER.

The by-products recoverable in the manufacture of coke are numerous. Beside the coke dust and "breeze," there are the gaseous products, illuminating gas and fuel gas; and tar with its several distillates, consisting of the light volatile oils, naphtha and benzol, with their derivatives carbolic acid, creosote, etc.; followed by the heavier lubricating oils and the residue of pitch or asphalt and anthracene. There is beside the ammonia liquor, obtained in the washing and largely used in the manufacture of soap and allied industries.

All by-product processes require skill and a thorough chemical knowledge of the various hydrocarbon products that are formed, together with their use in the manufactures. Due regard must always be had, however, for the particular products it is desired to obtain. Some of the products named can only be obtained by the exclusion of others.

For example, the quality of illuminating gas, derived from the manufacture of coke, is much impaired if the benzol is taken out for fuel purposes. An expert knowledge of the chemical industries is therefore required to select and utilize these available products to the best advantage.

IMPORTANCE OF SAVING BY-PRODUCTS

The idea of saving the by-products, in manufactures, generally, has received much attention in recent years and many industries are now based on the utilization of what was formerly a waste product of another industry. The study of the various by-products in the manufacture of coke has opened a wide field; and by-product furnaces or ovens have been specially designed for parparticular needs and requirements.

Chief among these is the type known as the "Semet-Solvay regenerative oven." In this type, the gas retorts or ovens are horizontal, while in another type of oven known as the "Kopper's oven," the retorts or flues are vertical.

The successful operation of all types of by-product ovens is largely dependent on the uniform application of heat and a careful proportionment of the width of the furnace to the volume of gas generated.

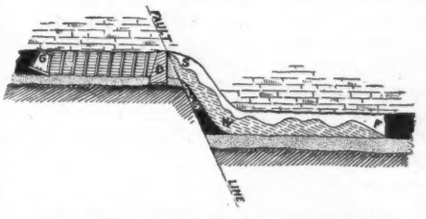
Air Blasts and Bumps

Air blasts of a different nature from bumps—Former due to sudden rush of water accumulated on a pitch—Bumps caused by readjustment of rock masses within the earth.

READING the article entitled "Occurrence and Causes of Bumps in Coal Mines," *Coal Age*, Nov. 9, p. 760, has given rise to a discussion, here, as to the exact difference between an air blast and a bump, as these terms are used in coal mining. It would be interesting to have the nature of these two phenomena explained in *Coal Age*. I have contended that they are due to very different causes, but have been unable to explain in what way they differ. Apparently, each is manifested as a severe shock that often does much damage in the mine. STUDENT.

Nanaimo, B. C., Canada.

An air blast, as the term is used in mining, is of a nature wholly different from what is termed a "bump." Air blasts only occur on steep pitching seams, or under conditions where a considerable body of water has accumulated at some higher point and has suddenly been released and moved bodily to a lower point where it was brought to rest with a violent jar or shock.



SHOWING ACTION OF AIR BLAST

An air blast occurring in a mine is of a nature quite similar to what is known as "water hammer," in a pipe system. In the accompanying figure, we have attempted to illustrate one condition under which it is possible for an air blast to occur. In the figure is shown a faulted seam of coal, where

a heading has been driven beyond the fault, which is a downthrow.

A water feeder having been tapped at the face of the heading (*F*), the place was abandoned and a strong dam (*D*), built to prevent the flooding of the mine. As the water accumulated in the swale at (*W*), it is evident that the rise of water level on reaching the roof at that point would entrap a considerable body of air at *S* and *F*.

As the water continues to accumulate, the pressure on the air at *S* is increased, being equal to the head of water rising toward the face. Nothing happens, however, until a possible fall of roof or coal agitates the water and the air and water tend to change places, the air forcing its way through the water, and the water rushing with great force against the dam. This is called an air blast.

The term "bump" has reference to a readjustment of equilibrium in the earth's strata. Owing to the unequal stresses set up through the extraction of the coal over large areas, or to one or more of the various hidden causes in the earth's crust, there comes a time when the formation is unable to support the strain thrown upon it and a readjustment takes place, which is manifested by a severe shock or jar that the mines term a "bump."

Examination Questions Answered

Miscellaneous Examination Questions

(*Answered by Request*)

QUESTION—*What are the minimum gradients, which should be given to underground roads for the following purposes: Water levels, levels for horse haulage, self-acting haulage, and direct haulage?*

ANSWER—In order to provide good drainage, the ditches, in a water-level entry, should be given a fall varying from 2 to 6 in. in 100 ft. For animal haulage on levels, the grade should favor the movement of the loaded cars. In order that it will require the same pull to move the loaded cars down a grade, as to pull the empties up the same grade, the road should be given a fall of from 1 to 1.5 per cent in favor of the loaded cars.

Self-acting inclines can be made to operate successfully on grades varying from 3 to 15 or 20 per cent, depending on conditions regarding the relative weights of the empty and loaded cars and the condition of track and rolling stock. It is not clear what is meant by "direct haulage." There are various kinds of rope haulage adapted to different grades varying from level to vertical.

QUESTION—*Give the comparative advantages and disadvantages of the longwall and room-and-pillar methods of working a coal mine.*

ANSWER—The chief advantages of the longwall method of mining are: Complete extraction of the coal; good ventilation at the working face; the avoiding of the necessity for building doors and stoppings; less expense for timber; and, finally, more direct roads to the working faces.

Where the conditions are favorable longwall working has few, if any, disadvantages. The method requires the building of good packwalls, but this material would otherwise have to be hoisted to the surface, in many instances. A longwall mine can not lay idle for any length of time without serious damage to the work.

The room-and-pillar method of mining has the advantage of providing separate working places for the men, where each man is responsible for the condition of his own place. This method gives a smaller production of coal in the first working, a large percentage being left as pillars for the support of the roof, until the work of robbing is commenced. The room-and-pillar method affords opportunity for a squeeze or creep to develop and much coal is often lost in pillars that can not be recovered.

QUESTION—*What must be carefully considered before the work of drawing pillars is begun?*

ANSWER—Before drawing pillars the possibility of future development must be considered carefully; and the effect that the taking out of the pillars will have on adjoining workings and on the surface. The work must be so arranged that the line of pillar work will be more or less straight, so that no excessive pressure will be thrown on any of the pillars. The question of the presence of water or gas in the overlying strata, must be determined, and provision made to avoid accident on this account.

QUESTION—(*a*) *What are your reasons for or against systematic timbering and should it be adopted?* (*b*) *Can the road and working places be kept more secure than when the timber is staggered and set up irregularly without system as to space and alignment?*

ANSWER—(a) The chief advantage of systematic timbering lies in the fact that the miner is not permitted to follow his own judgment and can not postpone the setting of timbers, as he would do, otherwise. The roof pressure is more uniformly distributed in systematic timbering and less timber is crushed by excessive weight than where the posts are set irregularly. There is less danger, also, from a hidden slip in the roof being undiscovered and causing accident. On the other hand, systematic timbering requires a larger outlay for timber than may be necessary, at times. Under uniform roof conditions, systematic timbering is advisable.

(b) Roads and working places are always more secure where systematic timbering is employed.

QUESTION—*When is an electric wire said to be grounded?*

ANSWER—An electric wire is said to be grounded when it is in connection with the ground, or with a system of pipes running into the ground, in such a manner that the current will pass from the wire into the ground.

QUESTION—*If a breast is driven a distance of 500 ft. on a rising grade of 10 per cent, what should be the distance represented on the map of the mine, and what height has the breast attained above the gangway level?*

ANSWER—In this case, the pitch distance is 500 ft. and, the grade being 10 per cent, the grade angle or angle of inclination is that whose tangent is 0.1, or 5° 43′. Then, since the cosine of this angle is 0.995, the horizontal distance corresponding to the length of the breast is $500 \times 0.995 = 497.5$ ft., or 4.975 in. as measured on the map.

The total rise of the breast above the gangway is 49.75 ft. In this calculation the percentage of grade is estimated on the horizontal distance, which is common practice in seams of moderate inclination.

QUESTION—*In a non-gaseous mine hitherto worked with open lights, marsh gas has made its appearance in considerable quantity. What lamp would you recommend to be used by the workmen?*

ANSWER—Under these conditions the workmen should be equipped with electric cap lamps, or provided with locked safety lamps of an approved type.

QUESTION—*What first-aid treatment would you give to a workman whose eye has been injured?*

ANSWER—Remove at once any speck of coal or other foreign matter observed on the eye. If the injury is severe, while waiting for the doctor apply absorbent cotton or soft cloth soaked in cool water, bandaging the same, not too tightly, but sufficiently so to prevent movement of the eyelid. Keep the cloth and bandage constantly wet with cool water to prevent inflammation. A few drops of olive oil in the eye will help to allay irritation. Never allow the injured one to rub his eye.

CORRECTION

Examination Question, Nov. 9, p. 762—Last lines of the answer to the first question on the page should read: Finally the velocity of the air current is

$$80{,}000 \div 64 = 1{,}250 \text{ ft. per min.}$$

Domestic Coal Situation, as Shown by the Government Report on Consumers' Stocks as of Oct. 1*

By W. F. McKenney, E. E. Finn and F. G. Tryon

As time progresses it becomes clear that if there is to be any pinch in the coal market this winter it will be in the supply of domestic fuel. Further, it is clear that if any region experiences difficulty it will be the anthracite-consuming territory of the Northeast. Finally, it is clear that the success of any community in meeting the pinch, if one develops, will be proportionate to its foresight in substituting other fuels—bituminous coal, coke, oil or the smaller sizes of anthracite—for domestic anthracite.

The Geological Survey has made no forecast of the condition of the coal market next winter because forecasting is not consistent with the Survey's regular business of reporting on the facts of supply and demand. Observers outside the government seem to agree that the country ought to be able to pass the winter with no crisis in the supply of steam coal. Anxiety is still expressed in some quarters over the low reserves of household anthracite, but it is generally agreed that by substituting other fuels, the stringency can be met.

It is pointed out that the responsibility for educating the public to the need of substitution and for providing the substitute fuels themselves rests largely with the retail dealer. The real test of his success in meeting the situation, it is agreed, will come with cold weather, when the current consumption of anthracite passes the current production. It is recalled that the consumption of anthracite is vastly greater in January than in October, perhaps four times as great. There can be no doubt of the ability of the bituminous industry to supply substitute fuel, if given time enough. The danger, if any, lies in delaying the demand for the substitute until too late to provide it at reasonable cost and with reasonable promptness.

Because the supply of domestic fuel will assume such unique importance, it has seemed worth while to restate in greater detail the figures on the retail coal situation which were summarized in the recent report on stocks of coal undertaken jointly by the Bureau of the Census and the U. S. Geological Survey under authority of the Federal Fuel Distributor. The figures represent deliveries during the month of September and the condition of stocks on Oct. 1. At this date they are matters of history, but it is a history out of which the events of today have sprung and without which the developments of to-morrow cannot be understood. It must be remembered that these figures represent a sample only, and a rather small sample at that, probably only 20 per cent of the total tonnage handled by retailers. It is, however, a typical sample.

Stocks Outside the Anthracite-Consuming Territory

In discussing the present situation it is necessary to differentiate sharply between territory north and east of the line of the Missouri, Ohio and Potomac rivers, on the one hand, and the territory to the south and west of that line on the other. The first includes all the states where anthracite is a significant element in the domestic fuel supply (Fig. 3), although even in many of these states, notably Iowa, Illinois, Indiana, Ohio and western Pennsylvania, subordinate to bituminous coal.

Outside the anthracite-burning zone practically the entire population cooks its meals and warms its dwellings with soft coal, and there the question of the supply of domestic fuel becomes simply, "How does the condition of retail yards compare with normal at this season?" From the accompanying tables and diagrams it will be seen that stocks on Oct. 1 were low, but that dealers had been endeavoring to make up for the delay during the strike by delivering coal at a faster rate than normal.

First, as to stocks on hand Oct. 1, Table I shows the tonnage in the yards of a selected list of retailers outside the anthracite zone. In comparison with a year ago (Nov. 1, 1921) they showed a decrease almost everywhere (column 6 of Table I and also Fig. 1). On the average the decrease was 67 per cent. But, of course, 1921 was a period of comfortable stocks. In comparison with a time of shortage—such as June 1, 1920—the 1922 stocks outside the anthracite zone showed an increase (last column of Table I). In making this last comparison, however, it must be remembered that they ought to show a large increase, because retail stocks are generally higher in the autumn than in the summer.

Next, as to demand and the rate that retailers were supplying it. The sample retailers outside the anthracite zone, shown in Table I, delivered more coal to their customers in September, 1922, than in the preceding September. From Fig. 2 it will be seen that this increase was general, though not universal, in the non-anthracite territory. It was a natural increase to make up for unavoidable postponement of usual deliveries while the strike was on.

Stocks in the Anthracite-Consuming Territory

Inside the anthracite zone conditions were much less favorable.

Stocks of Anthracite.—Stocks of anthracite itself were very low on Oct. 1. The quantity in the cellars of householders, concerning which no statistics are available, was undoubtedly but a fraction of normal. Stocks in the yards of retailers (anthracite only) were the lowest on record during the period over which statistics extend. The figures given in the government's report need not be repeated here, but in brief they showed that retail yards carried only 13 per cent as much on Oct. 1, 1922, as at the corresponding time last year. At the rate of delivery made by these dealers to their customers in September, 1921, the stocks on Oct. 1, 1922, were sufficient for 7 days.

Anthracite in Massachusetts.—These reports to the Federal Government from a selected list of retailers are confirmed by the records of the Massachusetts Fuel Administrator, which cover all yards in that state. Massachusetts dealers had 73,000 tons of anthracite on Oct. 1, 1922, only 8 per cent of what they carried a year ago, and even barely a third of what they reported on Nov. 1, 1920, at which time a temporary scarcity existed. The anthracite stocks

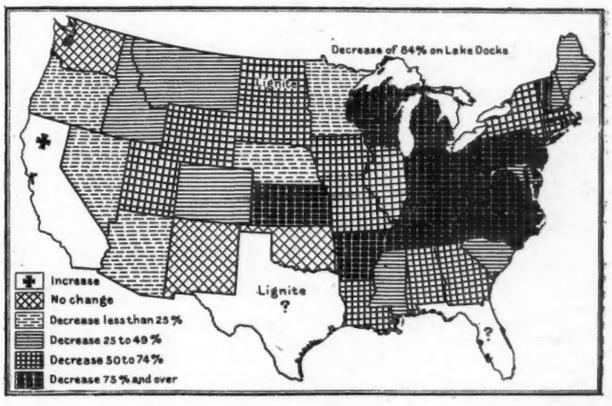


FIG. 1—HOW RETAILERS' STOCKS OF ALL COAL (ANTHRACITE AND BITUMINOUS), ON OCT. 1, 1922, COMPARED WITH THOSE ON NOV. 1, 1921

Stocks of bituminous coal in retail yards on Oct. 1 were about half what they were a year ago. Stocks of anthracite were barely 13 per cent of last year's stocks. The total stocks of retailers—including both hard and soft coal—showed a decrease of 67 per cent as compared with 1921. The map shows that the decrease was small in the Far West, and most acute in the territory east of the Mississippi River and north of Alabama.

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TABLE I—RETAIL DEALERS' STOCKS OF BITUMINOUS COAL ON OCT. 1, OUTSIDE ANTHRACITE-CONSUMING STATES.
(In net tons)

State	Deliveries to Consumers: Dealers Reporting	Tons Delivered Sept., 1921	Tons Delivered Sept., 1922	Per Cent of Change b	Change in Stocks on Hand: Dealers Reporting Each Date a	Per Cent of Change Oct. 1, 1922, as Compared with b Nov. 1, 1921	Per Cent of Change Oct. 1, 1922, as Compared with b June 1, 1920
Total excluding Anthracite Territory	265	301,433	317,686	+ 6	211	— 67	+ 35
North Carolina	9	7,963	8,940	+ 12	7	— 78	+ 70
South Carolina	13	3,256	4,484	+ 38	10	— 47	— 22
Georgia	25	13,725	13,972	+ 2	19	— 64	+ 42
Florida	3	1,338	2,123	+ 60	.....	.....	.....
Kentucky	42	46,970	41,252	—12	39	— 82	— 28
Tennessee	22	30,464	28,946	— 5	18	— 83	— 32
Alabama	27	5,827	7,481	+ 28	24	— 57	+ 111
Mississippi	12	4,566	4,189	— 8	9	— 27	+ 38
Missouri	36	129,054	142,623	+ 10	29	— 68	+ 90
Kansas	6	3,816	4,583	+ 20	4	— 79	+ 729
Oklahoma	5	954	1,390	+ 46	3	— 9	+ 47
Arkansas	6	1,545	1,776	+ 15	4	— 79	+ 59
Louisiana	3	1,416	1,129	—20	3	— 50	.....
Texas	3	4,000	1,483	—63	1	+ 138	.....
Colorado	7	8,555	8,888	+ 4	6	— 48	— 3
New Mexico	8	5,461	5,538	+ 1	7	+ 2	+ 139
Arizona	5	673	903	+ 34	5	— 15	+ 84
Utah	5	9,797	9,352	— 5	4	— 69	+ 55
Nevada	7	873	1,237	+ 42	3	— 14	+ 39
Wyoming	3	996	536	—46	3	— 69	+ 87
Montana	2	2,831	2,565	— 9	1	— 30	— 12
Idaho	5	8,147	9,421	+ 16	4	— 47	+ 369
Washington	3	4,284	8,887	+ 108	1	— 2	— 11
Oregon	6	3,624	4,866	+ 34	5	— 24	— 8
California	2	1,298	1,122	—14	2	— 6	+ 980

(a) Includes only dealers from whom reports were available for each of the dates. The dealers reporting include only a fraction of the total.
(b) A plus sign denotes an increase; a minus sign, a decrease.

reported to the Massachusetts Administrator have been as follows, in net tons:

April 1, 1919	572,000	Feb. 1, 1922	695,000
April 1, 1920	343,000	April 1, 1922	727,000
Nov. 1, 1920	234,000	June 1, 1922	535,000
Jan. 1, 1921	262,000	Aug. 1, 1922	146,000
April 1, 1921	808,000	Sept. 1, 1922	47,000
Nov. 1, 1921	917,000	Oct. 1, 1922	73,000

Anthracite and Bituminous Combined.—To speak of anthracite stocks alone, however, means little, for it neglects the efforts of many dealers and consumers to stock up with substitute fuels. Yet even considering anthracite and bituminous as a common source of supply the reserve on Oct. 1 in the anthracite zone was far below normal. Table II shows that, as compared with Nov. 1, 1921, stocks of all coal showed a drop of 66.7 per cent and that even compared with the low point of June, 1920, they showed a decrease of 11.8 per cent. The same story is told graphically by Fig. 1. Not a state in the anthracite zone but exhibits a decrease from November last year even in *all coal in yards*, whether hard or soft, and in many states the decrease was as much as 75 per cent.

Substitution of Bituminous.—Announcement that anthracite will be distributed on the basis of 60 per cent of last year's shipments brings home the fact that consumers must find substitutes for the remainder of their requirements. The reports indicate that during the month of September there was some replacement of anthracite with bituminous coal, but they also show that the replacement had not gone far enough to make up for the deficit in the supply of anthracite.

The extent of the replacement is indicated in Table III. A group of 125 dealers in New England delivered 139,000 more tons of bituminous coal in September this year than last, but delivered 210,000 less tons of anthracite. As a result their total deliveries of all coal were 71,000 tons less this September than last, a decrease of 17 per cent.

TABLE II—PER CENT OF CHANGE IN RETAILERS' STOCKS OF ALL COAL (ANTHRACITE AND BITUMINOUS) IN ANTHRACITE-CONSUMING TERRITORY

State	Number of Identical Dealers a	Per Cent of Change Oct. 1, 1922 as Compared with b Nov. 1, 1921	Per Cent of Change Oct. 1, 1922 as Compared with b June 1, 1920
Total Anthracite Territory	615	—66.7	—11.8
Maine	9	—46.6	+ 13.5
New Hampshire	8	—36.0	+ 17.7
Vermont	6	—84.3	—66.7
Massachusetts	56	—66.5	+ 6.0
Connecticut	27	—64.8	+ 119.4
Rhode Island	11	—45.2	+ 37.0
Total New England	117	—62.7	+ 19.6
New York	31	—58.7	+ 17.7
New Jersey	22	—75.1	—30.7
Pennsylvania	36	—77.5	—72.9
Maryland	11	—38.0	+ 35.1
Delaware	6	—78.6	—33.9
District of Columbia	5	—74.1	— 7.7
West Virginia	6	—76.7	+ 3.3
Ohio	49	—78.8	—36.2
Indiana	86	—81.8	+ 9.6
Illinois	68	—60.9	+ 120.5
Michigan:			
Northern Peninsula	4	—85.0	+ 211.1
Southern Peninsula	40	—75.0	+ 38.6
Wisconsin	35	—82.9	—11.1
Minnesota	8	—43.7	+ 97.5
Iowa	64	—63.6	+ 38.3
North Dakota	5	—54.8	+ 43.7
South Dakota	4	—62.2	+ 54.9
Nebraska	6	—25.9	+ 48.6
Virginia	12	—86.5	—58.0

(a) Includes only dealers from whom reports were available for each of the dates. The dealers reporting include only a fraction of the total.
(b) A plus sign denotes an increase; a minus sign, a decrease.

What was true in New England was true of New York, New Jersey and the Lake dock states: deliveries of bituminous increased, but not enough to make up for the decrease in anthracite. In other words, after a five months' strike, retailers were delivering to their customers less coal rather than more than usual.

TABLE III—DELIVERIES OF ALL COAL BY RETAILERS TO CUSTOMERS IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921, IN ANTHRACITE CONSUMING TERRITORY
(Net tons)

State	Dealers Reporting	Tons a: Anthracite	Tons a: Bituminous	Tons a: Total Coal	Per Cent a: Anthracite	Per Cent a: Bituminous	Per Cent a: Total Coal
Total Anthracite Territory	720	— 477,081	+ 82,761	—465,346	— 70	+ 13	—26.4
Maine	10	— 4,884	+ 3,704	— 1,180	— 63	+ 35	— 6.4
New Hampshire	10	— 2,597	+ 1,370	— 1,227	— 66	+ 33	—15.3
Vermont	7	— 2,989	+ 1,138	— 1,851	— 78	+ 63	—33 0
Massachusetts	60	— 130,734	+ 34,978	— 95,756	— 78	+ 42	—38.1
Connecticut	27	— 43,671	+ 24,299	— 19,372	— 81	+ 154	—27.7
Rhode Island	11	— 25,188	+ 73,548	+ 48,360	— 86	+ 217	+ 76.5
Total New England	125	— 210,063	+139,037	— 71,026	— 79	+ 93	—17.0
New York	34	— 100,323	+ 39,798	— 60,525	— 60	+ 98	—29.0
New Jersey	24	— 29,498	+ 3,331	— 26,167	— 63	+ 42	—47.9
Pennsylvania	36	— 12,173	— 2,803	— 14,976	— 40	— 9	—24.7
Maryland	13	— 5,396	+ 62	— 5,334	— 52	+ (b)	—25.0
Delaware	6	— 2,437	— 767	— 3,204	— 56	— 36	—49.1
District of Columbia	7	— 6,719	+ 9,356	+ 2,637	— 47	+ 55	+ 8.5
West Virginia	8	— 1,240	— 2,165	— 3,405	—100	— 23	—32.2
Ohio	61	— 8,107	— 37,610	— 45,717	— 86	— 33	—36.8
Indiana	113	— 4,280	— 15,377	— 19,657	— 80	— 24	—27.9
Illinois	77	— 22,174	— 49,654	— 71,828	— 64	— 76	—34.6
Michigan:							
Northern Peninsula	5	— 3,958	— 286	— 4,244	— 75	— 4	—34.4
Southern Peninsula	51	— 26,792	— 11,566	— 38,358	— 92	— (b)	—45.4
Wisconsin	38	— 18,870	+ 2,841	— 16,029	— 83	+ 12	—34.1
Minnesota	8	— 16,782	+ 10,256	— 6,526	— 72	+ 45	—14.2
Iowa	78	— 3,273	— 1,226	— 4,499	— 85	— 2	— 8.3
North Dakota	6	— 1,274	+ 702	— 572	— 78	+ 22	—11.8
South Dakota	5	— 1,093	+ 1,180	+ 87	— 81	+ 35	+ 1.8
Nebraska	8	— 331	— 1,604	— 1,935	— 57	— 13	—14.8
Virginia	17	— 2,298	— 744	— 3,042	— 76	— 6	—20.4

(a) A plus sign denotes an increase; a minus sign, a decrease. (b) Charge less than 1 per cent.

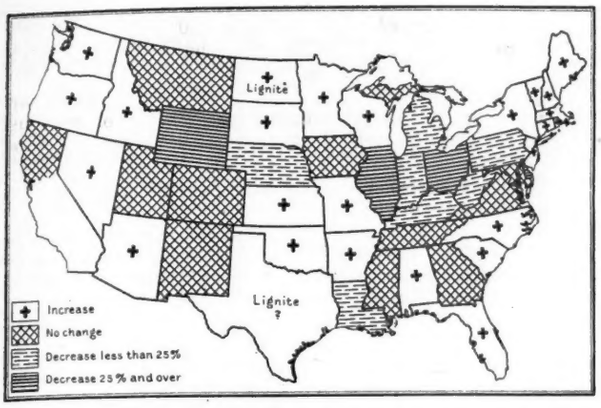


FIG. 2—HOW RETAILERS' DELIVERIES OF BITUMINOUS COAL IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921

Deliveries of bituminous coal to domestic consumers were nearly 10 per cent larger in September, 1922, than in the corresponding month a year ago. The map shows that deliveries generally increased or were at least as large as last year, except in the coal-producing states east of the Mississippi and north of Tennessee. The most notable increase occurred in the New England states, where deliveries were 93 per cent larger than during last September.

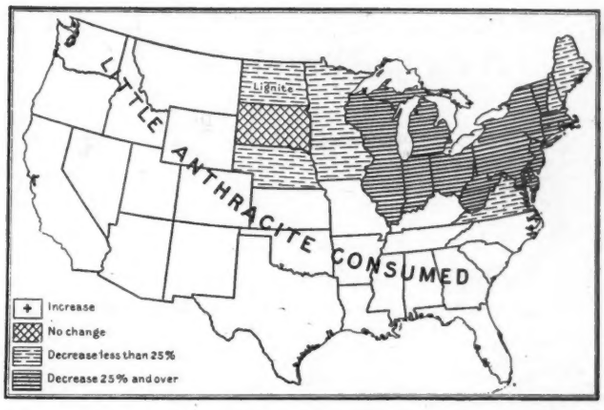


FIG. 3—HOW RETAILERS' DELIVERIES IN ANTHRACITE-CONSUMING TERRITORY OF ALL COAL IN SEPTEMBER, 1922, COMPARED WITH THOSE IN SEPTEMBER, 1921

As a result of the 23-week anthracite miners' strike, retailers' deliveries of anthracite during September, 1922, were but 30 per cent of the September (1921) deliveries. Deliveries of bituminous coal to domestic consumers increased, but not enough to equal the decrease in anthracite. The map shows that in the anthracite-consuming territory, with the single exception of Rhode Island, less coal was delivered by retailers in September, 1922, than in the same month a year ago.

Still more anomalous was the condition in the other states of the anthracite zone—Illinois, Indiana, Ohio, Pennsylvania and the lower peninsula of Michigan. In these states deliveries of bituminous coal itself, to say nothing of anthracite, were smaller this September than last (Fig. 2). Presumably this was due to a wholesome tendency of the shippers of these states—all coal producing to take care of long-haul destinations first—but it indicates how large a task remained before the retailer after Oct. 1 if his customers were to receive their usual supply.

Deliveries of Anthracite and Bituminous Combined.—The total quantity of all coal, hard and soft, delivered in September, 1922, showed a decrease in every state of the anthracite zone with one exception—Rhode Island (Fig. 3).

Responsibility of Retailer for Substitution.—The foregoing statistics show that the retailers of the anthracite zone, as of Oct. 1, had inherited a serious responsibility. Direction by federal boards and bureaus could do little to lighten the retailers' task. So delicate a thing as readjustment of the consuming habits of millions of householders could be accomplished only by local adjustments made by local dealers. It is a task to capitalize all the skill and restraint of the American retail coal merchant. It is up to him individually to diagnose his local market, advise his customers, forecast the demand for substitutes, and start them moving through his yard before congestion occurs. It is clear that some districts, New England for example, and Rhode Island in particular, had shown much more enterprise than others during the period covered by the stock report. The extent to which other communities have since followed this lead will largely determine the adequacy of their household supply in the winter.

The task of the retailer has been lightened by the unusually mild autumn. The average temperature in November has been decidedly above normal in the anthracite zone, just as November, 1918, was above normal, and November, 1919, below. If the weather man has not boosted the coal man's profits this time, he has at least spared him some undeserved criticism.

Supply of Byproduct Coke.—After the anthracite strike of 1902 many householders got through the winter by buying coke. Continuation of the late strike in the Connellsville region is curtailing the supply of beehive coke which would otherwise be available, but the byproduct ovens are producing heavily. The output of byproduct coke in October was 2,806,000 tons, a figure greater than the monthly average for even 1920. Of this quantity a considerable tonnage is available for domestic use.

Active demand for household fuel has largely absorbed the heavy stocks of unsold coke which had accumulated at byproduct coke works last spring. Statements courteously furnished by 19 byproduct coke operators supplying gas to the municipalities under contract show a decrease of 73 per cent from March 1 to Oct. 1, 1922. As the stocks of surplus coke at such plants on March 1 were slightly over 1,000,000 tons, it appears that the October stocks were about 270,000 tons.

In the Northeast the accumulation of unsold coke had been almost completely liquidated by Oct. 1. A considerable surplus remained, however, in certain cities of the West and Northwest.

Navy Lets Coal Contracts Till Jan. 1; to Ask New Bids for Rest of Fiscal Year

Announcement was made Nov. 22 that the Navy had accepted the bids submitted by the Iron Trade Products Co., of Pittsburgh, for November and December coal requirements at Higham, Mass.; Navy Yard, New York; supply depot, Brooklyn; Lake Denmark, N. J.; Washington Navy Yard, Bellevue Magazine, District of Columbia; Alexandria and Annapolis, calling for approximately 22,000 tons of coal.

No provision was made for the Navy at Philadelphia, it being explained that the successful bidder did not have sufficient tonnage to fill these demands as well as the others.

The acceptance of the short-term bids means that the Navy Department will call for new tenders to be submitted during December, the exact date to be announced later, calling for the delivery of more than 100,000 tons of run-of-mine coal. The reasons given for the failure of the Navy to accept the proposals for the long term were that the price was considered too high for the quality of coal sought and it was believed that more advantageous arrangements could be made later.

There were eleven sets of bids submitted on Nov. 14, but the Iron Trade Products Co. was the only firm to bid on the entire demand.

Following are the awards made, the prices being for delivered coal:

Higham, Mass., 250 tons, $8.25 and $8.15.

Navy Yard, Brooklyn, 4,000 tons, $6.75, $7.87, $7.87, $7.13, $6.74 and $6.74.

South Brooklyn, N. Y., 2,600 tons, $6.75, $7.87, $7.13, $6.74, $7.38 and $6.89.

Iona Island, N. Y., 300 tons, Item 1B, $6.55; 2B, $5.99, $6.37; $5.99, $5.88, $6.93, $8.05, $7,07 and $7.18.

Lake Denmark, 400 tons, $8.19, $7.81 and $7.70.

Washington Navy Yard, 4,500 tons, $6.55 and $6.44.

Naval Torpedo Station, Alexandria, 350 tons, $6.93, $6.55 and $6.44.

Annapolis, 10,000 tons, $7.08 and $6.93.

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Nov. 1*

Destinations	1922 Net Tons	1922 Per Cent	1921 Net Tons	1921 Per Cent	1920 Net Tons	1920 Per Cent
Lake Superior Ports						
Duluth Superior and Two Harbors	3,963,510	27.99	8,381,750	40.17	6,213,646	32.46
Ashland-Washburn	359,903	2.54	505,459	2.42	570,485	2.98
Copper Range (1)	399,919	2.83	555,721	2.67	552,305	2.89
Marquette	184,214	1.30	134,029	.64	268,275	1.40
Ft. William, Pt. Arthur and Jackfish	1,207,293	8.53	1,835,329	8.80	1,663,012	8.69
Other Lake Superior Ports	11,412	.08	37,750	.18	41,669	.22
Totals	6,126,251	43.27	11,450,038	54.88	9,309,392	48.64
Lake Michigan Ports						
Milwaukee-Racine	2,111,183	14.91	2,531,592	12.13	2,239,368	11.70
So. Chicago, Ind. Harbor and Cary	1,262,503	8.92	1,364,506	6.54	1,057,399	5.53
Sheboygan to Escanaba (2)	1,040,279	7.35	1,436,436	6.89	1,308,334	6.83
Other Lake Mich. Pts.	133,208	.94	214,032	1.02	181,738	.95
Totals	4,547,173	32.12	5,546,566	26.58	4,786,839	25.01
St. Marys River Pts.						
Detour and Lime Island	505,085	3.57	223,022	1.07	355,834	1.86
Sault Ste. Marie Can.	196,886	1.39	707,746	3.40	1,030,988	5.39
Sault Ste. Marie Am.	72,521	.51	87,846	.42	134,251	.71
Totals	774,492	5.47	1,020,614	4.89	1,521,073	7.96
Lake Huron Ports	161,391	1.14	208,683	1.00	185,746	.97
Detroit and St. Clair River Ports	849,690	6.00	961,548	4.60	1,152,852	6.02
Lake Erie Ports.						
Buffalo-Fairport and Toledo	980,946	6.92	157,312	.76	38,006	.19
Other Ports (regular)	147,632	1.05	78,815	.38	15,467	.08
Totals	1,128,578	7.97	236,127	1.14	53,473	.27
Georgian Bay Ports	408,276	2.88	750,365	3.60	840,741	4.39
Welland Canal, Lake Ontario and St. Lawrence River Ports	162,078	1.15	690,868	3.31	1,290,911	6.74
Grand totals	14,157,929	100.00	20,864,809	100.00	19,141,027	100.00

* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, Manager.
(1) Hancock, Houghton, Hubbell, Lake Linden, Portage and Torch Lake.
(2) Escanaba, Green Bay, Marinette, Menominee, Manitowoc and Sheboygan.

Iowa Strives for New Coal Tax Method

Proposed methods of taxing Iowa's coal, gypsum, limestone and other minerals have been considered recently by the joint tax committee of the 39th General Assembly at Des Moines. A severance bill which would tax all minerals taken from the ground has been discussed but this measure may be abandoned in favor of an occupation tax. It has been pointed out that the people of Iowa consume more Illinois and Kentucky coal than they do coal mined in Iowa. Under a severance tax Iowa coal could be taxed. Assuming that the tax would be added to the price of coal, the dealer in outside coal could increase his price a like amount, and the state would get but a part of the increased cost to the consumer. On the other hand, a tax levied on the dealer in coal would reach all the coal sold instead of Iowa coal alone.

Three previous Legislatures have considered taxing coal operators 1c. a ton for the benefit of the schools attended by the children of miners but have abandoned the plan and made an appropriation for the schools from the general tax fund. One of the arguments made against the coal tax was that it was class legislation and unconstitutional. The matter has never been tested in an Iowa court but a tonnage tax has been held constitutional in a number of other states.

Ford Plans to Buy Immense Coal Lands

Henry Ford is negotiating with the Elk Horn Coal Corporation for the purchase of 195,000 acres of coal lands in eastern Kentucky and western West Virginia. Negotiations were started in New York last week between John E. Buckingham, J. W. M. Stewart and John W. Patton of Ashland, representing the Elk Horn Corporation, and men from the Ford organization. Surveys of the territory involved in the deal are to begin this week.

The land lies in Floyd, Pike, Magoffin, Letcher and Knott counties, Kentucky, and Randolph and Upshur counties, West Virginia. Numerous working coal mines are open and there are vast untouched areas. The territory comprises the greatest single coal-mining field south of the Ohio River. The holdings mostly are on the Big Sandy River.

Binghamton Fuel Administrator Removed, Seized Coal Bound for Great Lakes

Acting under authority conferred by the special fuel laws of New York, State Fuel Administrator William H. Woodin on Nov. 22 removed from office Samuel J. Koerbel, district chief at Binghamton, for infringement of federal regulations of the interstate commerce laws. Mr. Koerbel was charged with overstepping his powers in seizing coal from railroad trains passing through his district on the way to Great Lakes ports.

The State Administrator on Wednesday notified the district chief that he would accept his resignation, but Mr. Koerbel announced that he had not resigned and would not recognize the authority of Mr. Woodin to dismiss him. Administrator Woodin then ordered him removed from office in accordance with Section 2, Chapter 673, of the Laws of New York, creating the fuel administration, which reads: "He [the State Fuel Administrator] may appoint and at pleasure remove such deputies and employees, including counsel, as may be needed, prescribe their powers and duties and fix their compensation."

Mr. Koerbel informed all county administrators in his territory of his resignation on Nov. 23, deciding not to contest further his removal by State Administrator Woodin. He advised them to remain at their posts pending the appointment of his successor. William H. Hecox, of Broome County, is understood to have signified his intention of resigning also.

No word has been received from Mr. Woodin as to the probable successor to Mr. Koerbel and county administrators have been advised to report direct to the New York offices.

"If I have been responsible for stirring the administration up to the point where our needs have at last been recognized, I shall be well pleased," said Mr. Koerbel. "I doubt if Mr. Woodin himself could seize a ton of coal en route to another state and get away with it."

Champaign Will Greet Illinois Institute

New haunts have been discovered for the Illinois Mining Institute. This year Champaign and Urbana, Ill., have been chosen for the winter meeting. The first session will be held Friday, Dec. 1, at 2 p.m., in the Illinois Union Building, Champaign. A. J. Hoskin will deliver a paper on the "Relative Consumption of Power by Various Operations in Illinois Coal Mining," after which R. B. Mitchell will address the assembly on "Pillar Drawing in Southern Illinois." Later will be shown "The Story of Coal."

On Saturday the members of the institute will visit the university and at 1:30 p.m. a business meeting will be called, at which new officers will be elected and new members voted in.

Count Assigned Cars Against Mines' Share

Service Order No. 26, issued last week by the Interstate Commerce Commission, assigning cars to certain mines, is significant principally because it provides that these cars "shall be counted against the distributive share allotted to the mines." The order provides that the Greenbrier & Eastern, the Chesapeake & Ohio and the Norfolk & Western shall assign four cars per day for ten consecutive working days to the mine of the Greenbrier Smokeless Coal Co., at Bellburn, W. Va.; to the mine of the Blue Jay Lumber Co. at Blue Jay, W. Va., and to the mine of the Garland-Pocahontas Co. at English, W. Va.

The commission also has issued amendment No. 3 to service Order No. 25. The amendment excludes from preferential coal loading fixed bottom cars with sides 48 in. or less in height. Heretofore the limit was 42 in.

President Would Amend Coal Commission Act to Make Questionnaires Answerable Under Oath

BY PAUL WOOTON
Washington Correspondent of *Coal Age*

President Harding has requested Senator Borah and Representative Winslow to suggest an amendment to the coal commission act which will make questionnaires answerable under oath and which will provide penalties for false statements or failure to reply to questionnaires. The act provides that the commission may issue subpoenas and may demand the presentation of books and records. This process would be cumbersome and it is believed that the situation can be met better under the amendment proposed.

Most of the preliminary work incident to organization and to the threshing out of policies has been accomplished. The commission is now getting into the fundamentals of its work. It is true that no brass tacks have been uncovered as yet but the objectives have been decided upon and the whole organization has started on its march toward them.

In some quarters an impression seems to have been gained that the commission is going to recommend what it considers a just and reasonable wage scale. Apparently the commission has no idea of acting as arbitrator in a wage dispute. Its function is one of fact finding, which differs radically from one of arbitration. It would be manifestly impossible for the commission to undertake to prescribe reasonable wage scales, which vary in each district. That would necessitate a study of the situation in a large number of individual mines. The thought that the commission might undertake some such function may be partly responsible for the polite skepticism of the replies received from the operators and from the mine workers and for the appeal which they made to the galleries.

DOUBT PERVADES COAL INDUSTRY

The coal industry appears to be very much in doubt as to what to expect from the commission. Marshall, Howell, Alschuler and Devine are four names which have been heard infrequently among those engaged in the coal trade. The industry has no preconceived estimate of the ability of those men to pass upon matters which concern them. On the other hand, the industry has a definite appraisal of Hammond, Smith and Neill. It never has thought of Mr. Hammond in connection with coal, but his ability in all matters pertaining to mining is well understood. Dr. Smith is the veteran head of a bureau which has taken a distinctly friendly attitude toward the industry and which does work of high quality. Mr. Neill is recognized as one who has had remarkable success in the arbitration of labor disputes and whose knowledge of employer-employee relationships is profound and constructive.

The public and the industry expect a report that will mark a distinct advance and which will display all the properties of good workmanship. Moreover, the public expects concrete results promptly. Not only does the law specify that there is to be a preliminary report on Jan. 15 but the public generally realizes that if the real purpose of the commission is attained its findings will be needed more as a guide during the next few months than may be the case during years that follow. The commission is functioning during an emergency. The industry needs it though as the work progresses. Most commission reports are leisurely reduced to writing. Proofs are read and re-read. Finally they are made public when the Superintendent of Documents has an ample supply for general distribution. Were the coal commission to follow this procedure, it would miss its main opportunity.

The staff of the President's coal commission at present is made up as follows: C. E. Lesher, engineer in charge of the engineering studies of the production, transportation and distribution of coal; David L. Wing, economist in charge of obtaining production costs; Prof. Joseph H. Willits, in charge of the study of wages, earnings and wage contracts. Mr. Lesher will be assisted by R. A. Walters, of Reading, Pa., and by C. A. Allen, of Salt Lake City. Mr. Wing is being assisted by H. S. Plews and James E. Black, who have been transferred for the purpose from the Federal Trade Commission. Miss Anne Bezanson, of Philadelphia, who formerly was in charge of a special study on wage earners for the Harvard committee on economic research and who now is connected with the industrial research department of the University of Pennsylvania, will assist Professor Willits.

Under the direction of Commissioner Neill, Miss Marie L. Obenauer will make a survey of living conditions and the cost of living in mining communities. She will be assisted by Miss Frances Valentine.

Commissioners Neill and Alschuler have been assigned the supervision of the investigation relating to labor facts. Commissioners Marshall and Devine will supervise investigations dealing with economic facts while Commissioners Smith and Howell have been assigned the supervision of the studies of engineering facts. In addition, Chairman Hammond will give much personal attention to the engineering phases of the investigation.

Miss Obenauer to Study Living Conditions Among Miners for Coal Commission

Miss Marie Obenauer, widely known as a result of the many industrial surveys which she has made during the past fifteen years, has been retained by the President's coal commission to assist Charles P. Neill in his study of living conditions in coal-mine communities. Miss Obenauer occupied an important position with the War Labor Board in which examiners for the employers and for the employees submitted their reports on women in industry to her for analysis prior to their presentation to the Board. In that capacity she represented neither the employer nor the employee group.

MISS MARIE OBENAUER

Miss Obenauer came to national notice prior to the creation of the Department of Labor. In the old Department of Commerce and Labor she had charge of the woman's division. At that time the department represented the public. When the Department of Labor was created, its organic act provided specifically that it represent labor. Miss Obenauer

left the government service soon after the division of the department.

Just before the United States entered the war Miss Obenauer undertook a survey conducted jointly by the National League for Women's Service and the federal government to ascertain the number of skilled operatives who could be recruited among women to serve in factories engaged in the manufacture of war supplies.

Miners Will Not Submit to Wage Cut Next Year, Says Searles

Prospects for peace or strikes in the coal-mining industry next year was the topic of an address by Ellis Searles, editor of the United Mine Workers' Journal, before the Business Science Club of Philadelphia at a luncheon at the Hotel Adelphia, in Philadelphia, Nov. 24. Mr. Searles said, in part:

"Whether there will be another strike of coal miners next year is a question that no living man can answer today. But I can say that the miners will not submit to any reduction in their wages, nor will they permit the coal operators to take away from them any of the conditions of their employment which they have won by many years of struggle, hardship and sacrifice. If there are any in this country who are anticipating lower wages for coal miners next year they may as well abandon that anticipation now and devote their spare time to some other subject. The miners are not asking for any general or universal increase in their wages in the bituminous industry, but miners in the anthracite region have asked, they are now asking and they will continue to demand increased wages until their wage rates are brought to the level where they belong and where justice to the mine worker and his family require that they shall be placed.

"For many, many years there has been a wide disparity between the wages of anthracite miners and those in the bituminous industry and in comparison with the wages of men employed in other comparable industries and lines of work. Wages of anthracite mine workers always have been too low and they must be brought up to a decent American level. Next year will see miners of the anthracite region contending as valiantly and heroically for an improved wage scale as they have done heretofore, and they will continue so to contend until they obtain what is justly due them. And they will not abandon their striving for the universal eight-hour day in the anthracite industry. Eight hours is the uniform length of the work day in every soft-coal field of this country, except in those places where the miners are positively denied their constitutional and legal right to organize or to join a labor union. In the anthracite industry, however, men labor eight, ten, twelve or more hours every day in order to earn a living for their families. Such a system is inhuman and unjust and it must give way to the progress that has marked all industry in America in recent years.

"Eight hours is long enough for any man to labor in or around a coal mine. If any of you doubt the truth of that statement, just go out and try it. You will find it is hard labor. More than that, it is work in which there is a greater degree of danger to life, limb and health than in almost any other productive industry in which men are engaged. Consider the fact that in the anthracite region of Pennsylvania alone there are 500 to 600 deaths each year of men employed in and around the mines, and there are 20,000 injured each year in preventible accidents. This is a frightful toll for men to pay for the privilege of producing coal for the rest of us. And we who enjoy the benefits and the comforts that flow from the labor of these men ought to be humane and fair enough to grant them a measure of compensation that will justify them in taking the awful risks that are encountered in the mining of coal. And in the bituminous industry the situation is practically the same. Government statistics show that more than 2,000 men are killed each year in and around bituminous mines and that tens of thousands are injured. The hazard of the coal-mining industry is so great that I am told life insurance companies insure coal miners only if they pay a rate sixteen years above their actual age."

Spangler Deaths Laid to Use of Open Lights When Gas Was Known To Be Present

A jury summoned by Coroner M. W. Swabb to hear the evidence and place the blame for the explosion in Reilly mine No. 1, at Spangler, Cambria County, Pa., on Nov. 6, when seventy-seven lives were lost, placed the blame for the explosion on the owners and management of the mine. After an all-day session on Nov. 21 the jury reported on Nov. 22 that: "With the knowledge of the company there was an insufficient number of firebosses employed, that open lights were used in the presence of dangerous gas and that the ventilation in the mine was inadequate."

District Attorney D. P. Weimer of Cambria County attended the inquest but has not decided upon a course of action. A fair summary of the vast amount of evidence submitted to the jury and put into the records would indicate that accumulations of gas were frequent in the Reilly Colliery, that the men who lost their lives and the men who escaped had general knowledge of conditions, that the mine foremen and firebosses knew of this condition and that the officials were kept busy patching up places where there was danger. Foreman Flanagan, in his testimony, asserted that while he knew of the existence of gas and took many precautions at various times to dispel accumulations, he did not consider the mine dangerous to work in. He did believe it was a difficult mine to work in, that general physical conditions were hard, but he did not agree with a number of witnesses that the mine was actually a dangerous place in which to work.

Seward E. Button, chief of the state mining department, in his report submitted to the Coroner's jury, recommends that the Reilly mine be worked exclusively with approved safety lamps. He also recommended that permissable powder be used for blasting, all shotholes to be tamped the full length of the hole with incombustible material, and all shots be fired with electric detonators by shotfirers, coal cutting machines to be of the approved closed type, also that a sufficient number of firebosses be employed to examine a mine thoroughly before each shift.

Spens Revokes Daily Report Requirement

Regulations requiring bituminous-coal operators to furnish the Federal Fuel Distributor with daily statements as to coal loadings, prices obtained for coal, and destinations to which coal is shipped were revoked Nov. 24 by Fuel Distributor C. E. Spens, effective Dec. 1. These regulations, which were promulgated on Sept. 27 and 28 and Oct. 4, required that daily reports of coal shipments in the territory east of the Mississippi River be transmitted to the fifteen naval officers acting as district representatives of the Federal Fuel Distributor. Operators in trans-Mississippi territory were required to make their reports directly to the Federal Fuel Distributor, except that Iowa, Montana and North Dakota operators reported to C. P. White, Assistant Federal Fuel Distributor, at St. Paul, Minn.

Anthracite Tax Adjudged Constitutional

Washington, D. C., Nov. 27.—The Supreme Court of the United States today affirmed the decision of the Pennsylvania Supreme Court holding the Pennsylvania anthracite tax constitutional. The highest court held that there is a difference between anthracite and bituminous coal since anthracite is used only as a fuel whereas bituminous coal is the base of byproducts. Nine states using 80 per cent of the anthracite produced in Pennsylvania intervened in the case, declaring that this will increase the cost of coal to them. The court, however, held that there was no cause for complaint on the part of these states since the tax was levied before the coal is offered to a common carrier, whereupon it would be subject to national legislation.

High Price of Anthracite Attributed to Inflated Wages Demanded by Mine Workers*

When anyone connected with the producers of anthracite is asked to talk about "economic and business aspects" of the coal industry it does not require a great deal of imagination on his part to know that what his auditors want is an answer to the question: "Why do I have to pay so much for coal?"

The public has a deep-seated conviction that the price of anthracite is too high. This belief is the real basis for the public demand for fact finding about coal that led to the passage of the law creating the U. S. Coal Commission. And the main fact that the public expects the commission to find, so far as anthracite is concerned, is that the public can and should get its domesitc fuel supply at a lower price. Assuming, as we may, that this able commission will deal only with facts these are some of the things that it will necessarily find:

First, that anthracite production is different in every essential respect from bituminous coal production. There is no overproduction of anthracite, there is no irregularity of production except that occasioned by the acts of the workers and, in spite of the public conviction to the contrary, the industry as a whole makes no excessive profits.

The production of anthracite is a costly and elaborate underground engineering proposition, and after the coal is brought to the surface from depths of from 500 to 1,500 feet it is cleaned, washed and sized in huge breakers which cost today about $1,500,000. Without going into the technical details of anthracite production, let me mention a few facts which indicate why it costs so much to produce hard coal.

For every ton of coal produced 11 tons of water must be pumped out of the workings. Besides the necessity for ridding the mines of some 800,000,000 gallons of water a day, an operation requiring continuous pumping 365 days a year, it is necessary to hoist and dispose of about half a ton of rock and dirt for every ton of coal produced. Every minute of every day two tons of air are forced into the anthracite mines for ventilation. The timbering of the mines requires the use of 500,000,000 board feet of timber every year, or about 7 ft. for every ton of coal produced.

That anthracite mining is in reality a manufacturing proposition is shown by the fact that of the 150,000 men employed in the industry only about 42,000 are directly engaged in mining. The other 108,000 are employed in the handling and preparation of the coal for market.

These operations give a different picture from the conception of coal mining which imagines it to be merely the scooping out of easily accessible supplies and the loading of the coal on the cars for market.

But all of this, you will say, does not justify the price of $14 a ton for anthracite coal. It does not. But it is only a part of the story. In the first place the anthracite producer does not get $14 a ton, directly or indirectly. The coal for which the New York consumer pays $14 or more is sold at the mine at the present time for about $8.25. But don't imagine all of the coal is sold at this price. About one-third of it is the so-called steam sizes, which the mine owner is compelled to sell below the cost of production. In 1921-22 the average realization on the whole production was not more than $6.28 a gross ton.

Let us look into the items that make up the mine price of anthracite. Labor costs $4.11; $1.05 goes for supplies; 58c. for administration, making a total of $5.74. Subtract this from the amount realized on the whole production, $6.28, and there is 54c. left, representing the average margin between production cost and mine price. Out of this margin must come trade discounts and taxes, which reduced the average profit of the anthracite operator in the past two years to not more than 35 or 40c. a ton. In other words, if all of the profits made by all of the anthracite producers in 1921 and 1922 were eliminated, the price of coal could have been reduced by about 40c. a ton.

The labor cost in this computation, which has back of it the authority of S. D. Warriner, based on a most careful investigation, was stated at $4.11. But obviously coal selling for $2 a ton, which is the average price of the steam sizes, constituting about 30 per cent of the commercial production, could not carry a labor cost of $4. In other words, the larger domestic sizes must carry more than the average labor cost. According to Mr. Warriner's computation, a fair allocation of the labor cost would make this item $5.30 per ton in the case of stove coal.

It is going to be fairly easy to convince the coal commission or for the commission to convince itself that the mine price of anthracite on the basis of present labor and other costs is fair, and that it cannot be reduced until these costs are reduced.

But what about the difference between the mine price of $8.25 for the domestic sizes and the price the consumer pays? This is made up of freight, which in the case of New York is about $2.75 per ton, including lighterage, and the costs and profits of retail distribution. The anthracite producer has nothing to do with his product, and derives no profit from it after it leaves the mine. Except for some legal details in the case of one or two companies, anthracite mining and railroad transportation are divorced industries, and whatever profit is made out of the transportation of anthracite goes to the railroad.

Operators Not Responsible for High Freight Rates

If railroad freight rates are too high, if dealers and distributors are adding too much to the mine price for their services, it is something for those interests to account for. The producer can only tell you what he gets for his product at the mine, what it costs him to produce it and the profit he makes out of it. There are some properties exceptionally favorably situated which realize more than the average profit I have stated, but there are many that average less and there are others that make no profit at all. These facts, however unpalatable and however different from the ideas commonly prevailing, are nevertheless facts which the searching investigation of the fuel commission may be expected to confirm.

Even the briefest discussion of economic aspects of the anthracite industry cannot ignore the labor problem, especially in view of the fact that it is labor disturbance that has centered public attention upon the industry in recent months. The labor cost of producing anthracite, according to the U. S. Bureau of Labor Statistics, has increased more than 138 per cent since 1914. Notwithstanding the fact that mine wages alone, among those paid by basic industries, have been increased instead of diminished since the end of the war, the miners presented to the anthracite operators early this year demands which would give them a further increase of wages, and add about $3 a ton to the cost of producing domestic anthracite.

There has never been a break for twenty years in the relations between anthracite producers and organized labor. There was no refusal this year on the part of the anthracite operators to negotiate with the miners' representatives. In fact we were committed to such negotiations and expected to proceed with them when, at the first meeting of the negotiators in March, we had presented to us a notice of suspension of mining on April 1. Protests against the unreasonableness and unwisdom of this step were brushed aside and an anthracite strike was initiated which lasted for five months—possibly one of the most costly and at the same time most useless strikes that this country has ever had—and at the end of it the miners went back to work at their old wages.

The basic rate of pay in the anthracite industry is 52½c. an hour for common labor, all other wages grading up from

*Abstract of address by Daniel T. Pierce, of the General Policies Committee of Anthracite Operators, at the meeting Monday evening, Nov. 27, at Town Hall, New York, under the joint auspices of the Women's City Club and the City Club of New York. Other speakers were Senator William E. Borah, of Idaho; Arthur S. Learoyd, of the New York State Fuel Administration, and Thomas Kennedy, vice-president of the United Mine Workers.

this figure to levels which make the anthracite miner the aristocrat of the world's workers. You may recall that a month or so ago a great deal of attention was centered upon the fact that the Steel Corporation had increased wages 20 per cent, but with this increase the common labor rate in the steel industry was raised to only 36c. an hour, while the anthracite industry pays 52½c. Every other class of workers has accepted reductions from war-time wage peaks. Every other worker, therefore, is paying out of deflated wages the inflated wages of anthracite workers. By reason of the fact, as stated by President Harding, that the people of the United States are at the mercy of the United Mine Workers the mine workers have been able up to this time to resist any adjustment of their wages corresponding to the adjustments that have taken place in all other industries. Having done this, the miner is not very much impressed by the statement of economists that it could not be done. But as soon as urgent necessities are satisfied, the miner will find that he is going to pay dearly for his victory in the form of interrupted employment which will reduce his earnings, whatever his wage rate may be.

The cost of labor alone is now more than the average selling price of anthracite at the mine before the war. The miner insists upon judging his wage, or the labor cost of anthracite, with relation to the retail price, whereas it can reasonably be judged solely with relation to the mine price.

These are a few of the economic aspects of the anthracite coal problem. Every producer of anthracite will agree that the retail price is too high. He wishes that it could be lower because he is fearful that consumption will be reduced by the high price, and he has not even the consolation of high immediate profits to compensate for this danger. He has an investment of about $8 per ton of annual production in a hazardous industry. A 10 per cent return, which he ought to get on such an investment, would give him 80c. a ton. On the average he gets about half that. Nevertheless he hears on all sides that he is a gouger.

Pittston Miners Threaten to Strike Unless Superintendents Are Changed

Grievance committees of ten locals of the United Mine Workers of America whose membership is employed at collieries of the Pennsylvania Coal Co. from Dunmore to Pittston, Pa., have voted to call a strike of the 10,000 workers at these collieries on Dec. 4 unless the company by that time accedes to the committee's demand to transfer all superintendents at the collieries in question.

This action came after a stormy session of four hours at which Rinaldo Capellini played a leading rôle. The meeting was called to adjust a dispute that came from the Old Forge local, No. 1296, whose members had a one-day strike the forepart of last week as a result of the transfer of Mine Foreman William Campbell from the Old Forge colliery to the Butler colliery and the sending of Arthur Young to the Old Forge colliery. The Old Forge grievance committee alleges that one of the first acts of the new foreman was to discharge two members of the grievance committee.

Illinois Receptive to Almost Any Wage Plan That Can Get U. S. Approval

Illinois has more or less made up its mind on the troublous question: "What of future wage negotiations with the miners' union?" On Nov. 24 in Chicago, the operators of the state crystallized their opinion for the benefit of Rice Miller and W. K. Kavanaugh, their representatives on the joint conference of operators and miners which tried in vain for four days beginning Nov. 14 to agree upon some method of future wage negotiations and which reconvenes Dec. 6 to try again. The Illinois view is, first, that the operators of the country certainly should meet the miners before April 1 in an effort to stave off another strike; second, that negotiations preferably should be by districts or by single states but that, as a second choice, the old Central Competitive Field or some similar group of states should act for the operators after hearing the contentions of the outlying district mine owners; third, that the Federal Coal Commission ought to be invited to observe the negotiations whenever they take place; fourth, that in case of disagreement with the miners, arbitration be offered as a last effort to avoid closing the mines, and fifth, that governmental sanction be obtained before any agreement is made. These ideas were put in the form of a resolution as a guide to Messrs. Miller and Kavanaugh.

The Illinois meeting was the fulfillment of an agreement made at the joint conference two weeks ago that the operators at that conference, having failed to unite upon any plan for negotiating the next wage scale, would all go home and talk it over with their constituents. The results of the Illinois meeting are to be carried by Messrs. Miller and Kavanaugh first into a session on Dec. 4 of the operators' half of the joint conference and then into the full conference of Dec. 6 when the operators may have united upon some negotiation plan. Up to the present there has been no unity. Outlying fields strove for, and were refused, a voice in national wage making and there was not even harmony among the four original states of the Central Competitive Field on the question of renewing the old four-state plan of wage making.

The attitude of Illinois is that strong effort be made to avoid a strike but that the operators of the country should do absolutely nothing that would lay them once more liable to indictment on a charge of conspiring with miners to set a wage scale for the country that would elevate the cost of coal to the people.

Attitude of Commerce Commission Turning Against Assigned Car Practice

Such a good showing has been made by the witnesses opposing the practice of assigning cars for railroad fuel that it is apparent that the attitude of some of the Interstate Commerce Commission members is changing. During the opening hearings it was apparent that the commission was disinclined to take any action that would add materially to the expenses of the carriers. The evidence as to the disruptive influence of the assigned car has been so conclusive, however, that none will be surprised if the commission should rule that assigned cars are to be used only during a real emergency and even then the permission of the commission may be required.

A large number of operators have presented figures showing their actual losses as a result of inequitable car distribution. Others testified as to how they have been forced to take railroad contracts at unprofitable figures so as to keep their mines in operation. B. E. Neal, president of the Neal Coal Co., of Indianapolis, was among the most effective witnesses presented by the operators. His earnestness and his fund of concrete information clearly impressed those sitting in the case.

Much credit is due to John Brophy, who spoke for the United Mine Workers. He declared that unequal running time as between mines is inequitable to labor and causes much dissatisfaction.

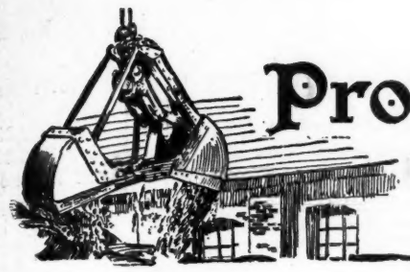
The defense of the railroads has been much weaker than was expected. Their attorneys have not made a good showing. That the railroads recognize the trend against the practice is evidenced by the fact that they have made drastic reductions in the number of assigned cars used since the hearing began.

Several operators who specialize in railroad contracts appeared in support of the assigned-car practice.

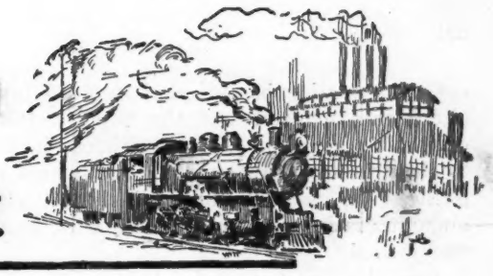
Retailers Submit Proposals to Commission

The National Retail Coal Merchants' Association has submitted a statement to the President's Coal Commission presenting the attitude of the association on the investigation which the commission is undertaking, dealing in detail with both the anthracite and the bituminous situation. Specific recommendations are made to the commission for bettering the situation with regard to each fuel.

ALFRED M. OGLE, president of the National Coal Association, who was stricken with appendicitis last week, is well on the road to recovery.



Production and the Market



Weekly Review

The spot coal market is quiet. Buying is confined to current needs, even in the domestic branch, and the tendency to acquire seasonable reserves has not passed beyond the stage of making inquiries on prices. *Coal Age* Index of spot bituminous coal prices receded to 330 on Nov. 27, as compared with 343 on the preceding Monday. The average price at the mine corresponding to this index number is $3.99; last week it was $4.16.

The market can be divided into two sections today. In the territory served by the regions producing coal for the Lakes there is absolute stagnation. Buyers are marking time while the Lake shipping season closes and "no-market" losses are reported for the first time since the strike. The trade expects a substantial buying movement with the close of the Lakes, however, and hopes that this tonnage will be absorbed with a minimum of price softening. The approach of cold weather always hastens purchases to augment reserves and, having delayed longer than usual this year, the consumer's re-entrance into the spot market is expected to prevent a slump in production.

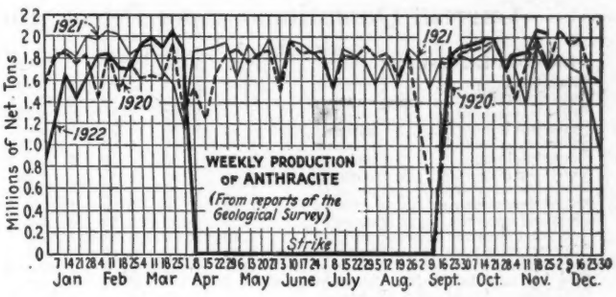
Markets Tightening in Eastern Centers

On the other hand, Eastern centers already are experiencing tighter markets. Poor deliveries have boosted prices and inquiries are much stronger. Spot coal is scarce and premiums are paid for quick deliveries. Good grades from central Pennsylvania are finding a ready market and there is a growing production of prepared coal to fill the gap caused by the anthracite shortage. New York, Philadelphia and Baltimore all report a stronger demand for industrial coals. Conditions in New England are improving and although there is no broad inquiry as yet, the reduced receipts from Hampton Roads have increased Southern coal prices and strengthened the position of the all-rail shippers.

Sellers at the Cincinnati gateway report more diversified conditions. Stodgy Northern demand is turning a larger tonnage south from the Virginia and the southeastern Kentucky fields. Low-volatile agencies are again soliciting orders, quoting reduced figures for early December business.

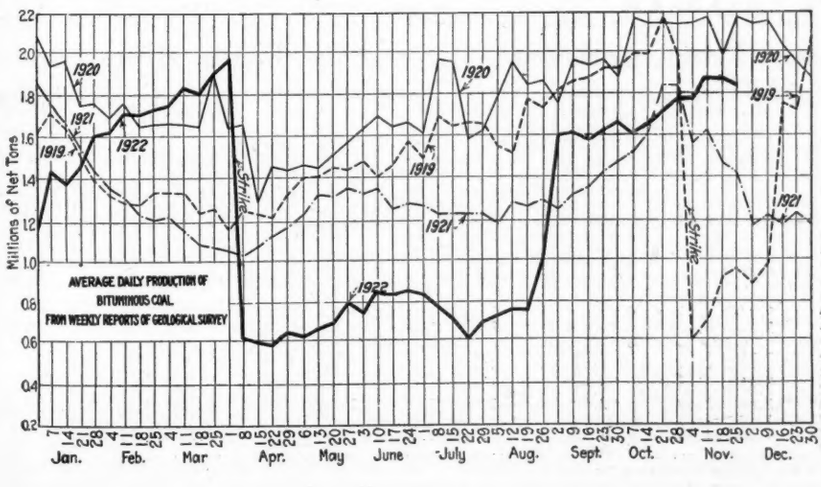
In the Middle West screenings are finding a better market. This is due not so much to improved demand as to lowered production. Domestic grades are in a slump and curtailed operation is reducing the available supply of fine coal.

Transportation conditions are improving. The car supply, however, is so erratic that individual shortages at the mines complicate the market. The uncertainty



of the car supply is so great that producers cannot gage their offerings; spot coal, like the demand, therefore is on a day-to-day basis in most sections.

The scarcity of domestic anthracite has become pronounced and with the advent of colder weather more substitutes are being sold. Independent prices have advanced with the shortage. Eastern markets have been promised early relief, as companies will soon divert more domestic tonnage in that direction with the closing of the Lakes. In the meantime these markets are being invaded by prepared sizes of bituminous coal and, once having gained a foothold, soft coal will make some permanent inroad on what has heretofore been an inviolable stronghold for the producers of domestic anthracite.



Estimates of Production

(Net Tons)

BITUMINOUS

	1921	1922
Nov. 4 (*b*)	9,327,000	10,666,000
Nov. 11 (*b*)	8,592,000	10,147,000
Nov. 18 (*a*)	8,871,000	11,213,000
Daily average	1,479,000	1,869,000
Calendar year	363,080,000	343,949,000
Daily av. cal. year	1,339,000	1,263,000

ANTHRACITE

Nov. 4 (*b*)	1,689,000	1,839,000
Nov. 11 (*b*)	1,350,000	1,863,000
Nov. 18 (*a*)	1,879,000	2,191,000
Calendar year	81,796,000	40,950,000

COKE

Nov. 11 (*b*)	103,000	246,000
Nov. 18 (*a*)	111,000	261,000
Calendar year	4,826,000	6,310,000

(*a*) Subject to revision. (*b*) Revised from last report.

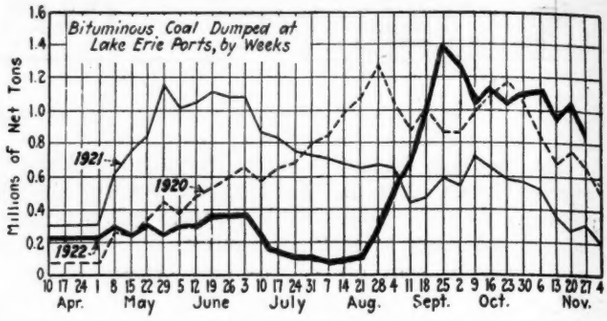
Colder weather has injected some life into the anthracite steam market, but the supply still exceeds the demand and one company has reduced its circular prices to clear its topheavy supply. Buckwheat is in the best position, as many producers insist on a proportionate amount of this size being taken with an order for domestic coal.

The Lake movement is slowing down. Last week's dumpings of anthracite at Buffalo amounted to 110,100 net tons, as compared with 151,450 tons in the preceding week. The Northwest's supply by Lakes will not exceed 40 per cent of normal this year.

BITUMINOUS

"Bituminous coal production during the week ended Nov. 18 was 11,213,000 net tons, as against 10,147,000 tons in the week preceding," says the Geological Survey. "Early returns for last week (Nov. 20-25) indicate that 11,000,000 tons were raised. Both bituminous coal and anthracite output in the week ended Nov. 18 were at high rates, and the total coal raised, 13,404,000 net tons, was the highest weekly out-turn since the strike and was exceeded this year only in the week ended March 25, when the total was 13,543,000 net tons."

The all-rail movement to New England amounted to 3,289 cars during the week ended Nov. 18, as compared with 3,329 cars in the previous week. Shipments for 1922 are now



21 per cent behind the corresponding period in 1921. Central Pennsylvania is getting into better position to ship to this territory, as the recent strength in prices at Hampton Roads has reduced the competitive advantage of these fuels. The car supply is uneven and keeps operators guessing

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

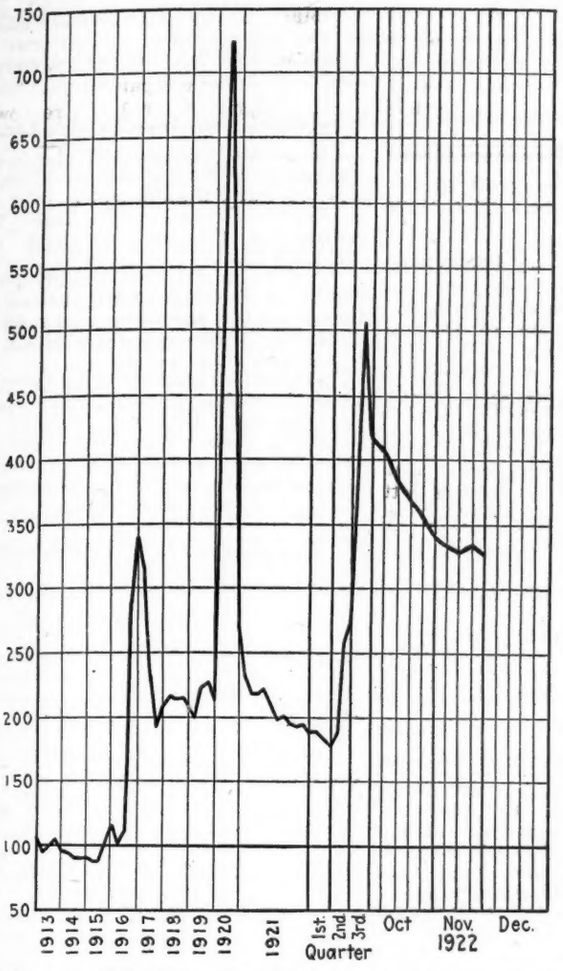
Low-Volatile, Eastern	Market Quoted	Oct. 30 1922	Nov. 13 1922	Nov. 20 1922	Nov. 27 1922†
Smokeless lump	Columbus	$6.60	$6.85	$6.75	**$6.50@$7.00**
Smokeless mine run	Columbus	6.25	6.25	6.10	**6.00@ 6.35**
Smokeless screenings	Columbus	5.85	5.85	5.75	5.50@ 6.00
Smokeless lump	Chicago	6.35	6.00	6.25	6.00@ 6.50
Smokeless mine run	Chicago	5.75	5.60	5.60	5.50@ 5.75
Smokeless lump	Cincinnati	7.00	6.00	6.00	**5.15@ 7.50**
Smokeless mine run	Cincinnati	6.10	6.10	6.10	*6.00*
Smokeless screenings	Cincinnati	6.10	6.25	6.25	*5.75@ 6.00*
*Smokeless mine run	Boston	7.10	7.10	8.00	7.75@ 8.25
Clearfield mine run	Boston	3.50	3.35	3.85	*3.25@ 4.00*
Cambria mine run	Boston	4.10	4.10	4.35	*3.75@ 4.75*
Somerset mine run	Boston	3.75	3.75	4.10	*3.50@ 4.25*
Pool 1 (Navy Standard)	New York	4.85	4.85	5.00	**5.00@ 5.25**
Pool 1 (Navy Standard)	Philadelphia	.....	.....	4.75	4.50@ 5.00
Pool 1 (Navy Standard)	Baltimore	.....	4.50	4.60	**4.50@ 5.25**
Pool 9 (Super. Low Vol.)	New York	4.25	4.20	4.25	**4.25@ 4.75**
Pool 9 (Super. Low Vol.)	Philadelphia	4.30	4.30	4.45	**4.25@ 4.75**
Pool 9 (Super. Low Vol.)	Baltimore	4.00	4.10	3.85	**4.25@ 5.00**
Pool 10 (H.Gr.Low Vol.)	New York	3.50	3.50	3.60	**3.75@ 4.00**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.50	3.50	3.60	**3.50@ 4.00**
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.35	3.35	3.35	3.25@ 3.50
Pool 11 (Low Vol.)	New York	3.05	3.00	3.05	**3.00@ 3.50**
Pool 11 (Low Vol.)	Philadelphia	3.15	3.15	3.15	2.90@ 3.40
Pool 11 (Low Vol.)	Baltimore	3.25	3.05	3.05	**3.00@ 3.25**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.30	3.45	3.50	3.35@ 3.80
Pool 54-64 (Gas and St.)	Philadelphia	3.50	3.50	3.50	3.25@ 3.75
Pool 54-64 (Gas and St.)	Baltimore	3.35	3.30	3.30	3.15@ 3.50
Pittsburgh sc'd	Pittsburgh	5.00	4.50	4.50	4.50
Pittsburgh mine run (St.)	Pittsburgh	3.25	3.35	3.35	*2.50@ 2.75*
Pittsburgh slack (Gas)	Pittsburgh	3.60	3.60	3.60	*3.00@ 3.25*
Kanawha lump	Columbus	6.25	5.85	5.75	5.50@ 6.00
Kanawha mine run	Columbus	4.75	4.25	3.60	*3.25@ 3.50*
Kanawha screenings	Columbus	4.10	3.60	3.35	*3.00@ 3.50*
W. Va. lump	Cincinnati	6.00	6.10	6.00	**6.00@ 6.50**
W. Va. Gas mine run	Cincinnati	4.35	4.25	4.00	*3.50@ 3.75*
W. Va. Steam mine run	Cincinnati	4.10	3.75	3.60	*3.35@ 3.50*
W. Va. screenings	Cincinnati	4.00	3.75	3.35	*3.00@ 3.50*
Hocking lump	Columbus	4.50	5.50	5.05	4.50@ 5.61
Hocking mine run	Columbus	3.60	3.50	3.50	*3.00@ 3.50*
Hocking screenings	Columbus	3.10	3.00	3.00	2.75@ 3.25
Pitts. No. 8 lump	Cleveland	3.81	3.81	4.15	**3.75@ 4.50**
Pitts. No. 8 mine run	Cleveland	$3.56	$3.56	$3.60	**$3.40@ $4.00**
Pitts. No. 8 screenings	Cleveland	3.31	3.31	3.31	*3.15@ 3.25*
Midwest					
Franklin, Ill. lump	Chicago	5.35	5.35	5.25	*4.50@ 5.50*
Franklin, Ill. mine run	Chicago	4.10	4.10	4.10	**4.00@** 4.25
Franklin, Ill. screenings	Chicago	2.60	2.60	2.60	*2.00@ 3.00*
Central, Ill. lump	Chicago	5.00	4.70	4.50	*4.00@ 4.50*
Central, Ill. mine run	Chicago	3.10	3.10	3.10	3.00@ 3.25
Central, Ill. screenings	Chicago	1.85	1.85	1.80	*1.60@ 1.75*
Ind. 4th Vein lump	Chicago	5.10	5.10	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	3.85	3.85	3.85	3.75@ 4.00
Ind. 4th Vein screenings	Chicago	2.35	2.05	2.05	1.90@ 2.25
Ind. 5th Vein lump	Chicago	4.75	4.75	4.75	4.50@ 5.00
Ind. 5th Vein mine run	Chicago	3.65	3.60	3.60	3.50@ 3.75
Ind. 5th Vein screenings	Chicago	2.10	1.85	1.85	1.75@ 2.00
Standard lump	St. Louis	4.25	4.25	3.75	**3.50@ 4.50**
Standard mine run	St. Louis	2.60	2.50	2.50	**2.50@ 2.75**
Standard screenings	St. Louis	2.00	1.30	1.35	1.25@ 1.50
West Ky. lump	Louisville	5.00	4.75	4.35	*3.50@ 4.00*
West Ky. mine run	Louisville	2.80	2.55	2.50	*2.00@ 2.50*
West Ky. screenings	Louisville	2.00	1.75	1.50	1.25@ 1.75
West Ky. lump	Chicago	4.10	4.10	4.10	4.00@ 4.25
West Ky. mine run	Chicago	3.10	3.10	2.85	*2.50@ 2.75*
South and Southwest					
Big Seam lump	Birmingham	3.95	3.95	3.95	3.45@ 4.45
Big Seam mine run	Birmingham	2.60	2.35	2.35	2.25@ 2.50
Big Seam (washed)	Birmingham	2.75	2.60	2.60	2.50@ 2.75
S. E. Ky. lump	Chicago	5.50	5.50	6.10	5.75@ 6.50
S. E. Ky. mine run	Chicago	4.25	4.25	4.25	4.00@ 4.50
S. E. Ky. lump	Louisville	6.75	6.60	6.50	6.00@ 7.00
S. E. Ky. mine run	Louisville	4.00	4.25	4.00	*3.50@ 4.00*
S. E. Ky. screenings	Louisville	4.10	4.00	4.00	*3.50@ 3.75*
S. E. Ky. lump	Cincinnati	5.85	6.25	6.50	*6.00@ 6.75*
S. E. Ky. mine run	Cincinnati	4.25	3.85	3.75	*3.25@ 4.00*
S. E. Ky. screenings	Cincinnati	4.00	3.60	3.25	3.00@ 3.50
Kansas lump	Kansas City	5.75	5.75	5.75	*5.00*
Kansas mine run	Kansas City	3.75	3.75	3.75	*3.50*
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Pre-Strike Independent	Latest Pre-Strike Company	Nov. 20, 1922 Independent	Nov. 20, 1922 Company	Nov. 27, 1922† Independent	Nov. 27, 1922† Company
Broken	New York	$2.34	.....	$7.60@$7.75	$9.00	$7.75@$8.15	$9.00	$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.75	9.25@10.50	7.75@ 8.35	**9.25@10.75**	7.75@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.75	8.10@ 8.35	**9.25@11.00**	8.10@ 8.35
Egg	Chicago*	5.09	7.50	6.90@ 7.40	12.50@13.00	6.90@ 8.25	12.50@13.00	**7.20@ 8.25**
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	**9.25@10.75**	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	**9.25@11.00**	8.15@ 8.35
Stove	Chicago*	5.09	7.75	7.20@ 7.60	12.50@13.00	7.15@ 8.25	12.50@13.00	**7.35@ 8.25**
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	**9.75@10.75**	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	**9.25@11.00**	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	7.20@ 7.60	12.50@13.00	7.15@ 8.25	12.50@13.00	**7.35@ 8.25**
Range	New York	2.34	.....	.....	.....	8.15	.....	8.15
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	7.00@ 8.00	6.15@ 6.20	**7.00@10.00**	6.15@ 6.20
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.50	6.15@ 6.20	**7.00@ 8.00**	6.15@ 6.20
Pea	Chicago*	4.79	6.00	5.60@ 6.10	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	3.50@ 4.25	4.00@ 4.25	*3.50@ 4.00*	*3.50@ 4.25*
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.25@ 4.00	4.00	3.25@ 4.00	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	1.50@ 3.00	2.75@ 3.00	*1.50@ 2.75*	*2.50@ 3.00*
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.00@ 2.75	2.75@ 3.00	2.00@ 2.75	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	.50@ 2.00	2.00	*.50@ 1.50*	*1.50@ 2.00*
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	.75@ 1.75	2.00	.75@ 1.75	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.25	.....	2.25

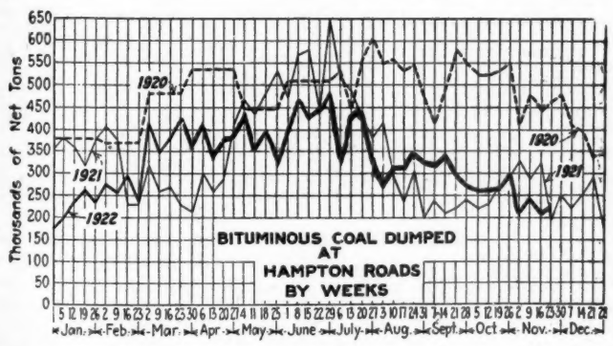
* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 330, Week of Nov. 27, 1922. Average spot price for same period, $3.99. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

as to whether to sell ahead at present prices or to take the market as they may find it. On the whole, however, orders are only slightly in excess of the current output. The resumption of work at the textile mills, now that the strike has been settled, is expected to increase the demand.

Hampton Roads dumpings were 211,415 net tons during the week ended Nov. 23, as compared with 202,000 tons in the preceding week. Coal on hand at the piers is increasing very slowly, as cars are so short and Western points are taking a heavy tonnage. There is a scattering amount loaded on export, bunkers are holding their own and coastwise business takes the bulk of the tonnage, most of it now going to New England. New York is taking a minimum of the Southern coals, the great portion of it on contract.



How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Nov. 11, 1922 Inclusive	Week Ended Nov. 11, 1922
U. S. Total	45.6	55.7	....	....
Alabama	63.5	64.6	84.3	84.1
Somerset County	55.5	74.9	37.0	38.1
Panhandle, W. Va.	55.3	51.3	56.9	53.8
Westmoreland	54.9	58.8	68.6	71.3
Virginia	54.8	59.9	59.1	64.3
Harlan	53.3	54.8	20.3	16.9
Hazard	51.7	58.4	15.6	20.8
Pocahontas	49.8	60.0	37.1	38.0
Tug River	48.1	63.7	32.2	30.3
Logan	47.6	61.1	25.8	31.2
Cumberland-Piedmont	46.6	50.6	33.4	32.3
Winding Gulf	45.7	64.3	30.2	27.1
Kenova-Thacker	38.2	54.3	41.8	41.4
N. E. Kentucky	32.9	47.7	29.2	34.4
New River	24.3	37.9	31.4	30.8
Oklahoma	63.9	59.6	64.2	61.1
Iowa	57.4	78.4	75.9	63.0
Ohio, Eastern	52.6	46.6	43.0	38.8
Missouri	50.7	66.8	70.7	60.1
Illinois	44.8	54.5	49.4	50.4
Kansas	42.0	54.9	57.2	(a)
Indiana	41.4	53.8	37.7	(a)
Pittsburgh†	41.2	39.8	41.0	41.5
Central Pennsylvania	39.1	50.2	58.7	47.6
Fairmont	35.3	44.0	40.8	33.2
Western Kentucky	32.5	37.7	32.6	36.6
Pittsburgh*	30.4	31.9	53.4	75.8
Kanawha	26.0	13.0	15.0	15.8
Ohio, southern	22.9	24.3	37.7	(a)

* Rail and river mines combined.
† Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Nov. 11, 1922	953,909	188,312
Previous week	994,827	194,077
Same week in 1921	759,777	154,850

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Nov. 8, 1922	4,990	2,046	174,498	45,529
Oct. 31, 1922	3,716	1,584	179,239	47,273
Same date in 1921	91,000	39,000	.....	.....

Lake business is, of course, dwindling. Mines are discontinuing their shipments to the lower ports and another week should see the end. During the week ended Nov. 27 the lower ports dumped 812,117 net tons. The movement for the season to date now stands at 18,420,125 tons, as compared with 22,932,800 tons during the corresponding period of last year. Softness pervades the Northwestern bituminous-coal market. Prices are being hammered down, all-rail competition is keen and the supply is reassuring consumers who feel that lower prices may be their reward for further delay in placing orders.

ANTHRACITE

Production of hard coal last week was 2,100,000 net tons, as estimated from preliminary reports on hand at this writing. During the preceding week it was 2,191,000 tons—a record which has been exceeded only once in the last six years.

That there is need for record production is evidenced by a clamorous demand for domestic sizes. Turning their attention from the Lake market, producers now promise early relief for other sections.

Steam coals are still topheavy, although the colder weather has reduced the accumulation. One company, however, has found it necessary to reduce its steam circular 50c. to stimulate sales.

COKE

Production of beehive coke was 261,000 net tons during the week ended Nov. 18, as compared with 246,000 tons in the previous week.

The resumption of several blast furnaces has increased the demand for Connellsville furnace coke. More are planning to follow as soon as enough coke is on hand to warrant it. Active consumers are nearly all covered on contract and as pig iron is so sluggish there is considerable price resistance shown by prospective coke buyers.

Foreign Market And Export News

British Collieries Are Well-Booked

Great Britain continues to produce coal at record-breaking speed. The output during the week ended Nov. 11 was the heaviest of the year—5,441,000 gross tons—according to a cable to *Coal Age*, and compares with 5,423,000 tons in the week preceding. The market is active, especially on the larger steam sizes.

The condition of the Welsh export market is very satisfactory and the home trade shows some signs of revival. The market is receiving the usual end-of-the-year contract inquiries and some good business has been done over 1923, including business with French railways, and in South American and Italian directions, and recently there have been inquiries from Egypt.

Many of the leading colliery owners are overbooked and out of the market. Foreign orders have been received from all the regular markets, and the fact that shipments to North America have declined to about 25,000 tons per week has not affected the position.

There has been a decided decline in nearly all values in Durham and Northumberland, and it would appear that the amount of fuel available for this year is largely responsible for it, coupled with the general uncertainty of the position. At the same time, the collieries are heavily booked, and sold out for December.

Continental inquiry tends to slow down, owing to the unsettled exchanges. France and Italy are taking fair quantities, but business with Scandinavian countries is quiet, and Germany is sparing in her new demands. America is still in the market for occasional cargoes of steam and gas coal, and the Argentine and the East are also in evidence.

Hampton Roads Market Indifferent

Indifferent business causes prices to fluctuate slightly, arriving at the end of the week to the previous week's level, and with dullness continuing to feature the market. The diversion of coal to the West continued to make its drain on the trade here.

The situation had only one bright phase—the approach of cold weather, but the trade has not been stimulated on that account to any great extent. Supplies on hand are held by a large number of houses.

Germany Must Speed Up Production

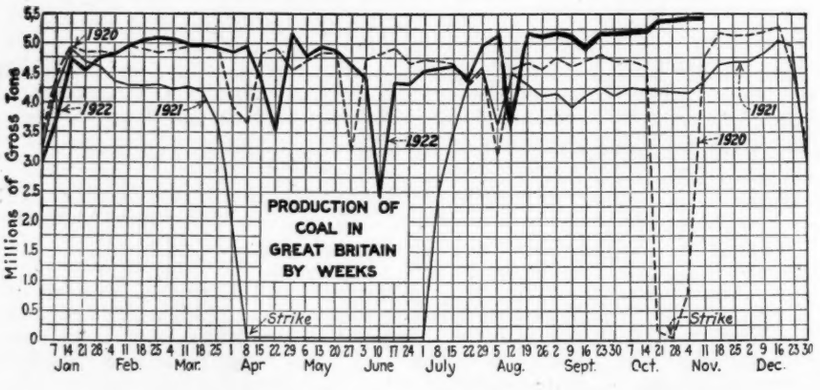
The returns of September coal production have been watched with the keenest interest, in view of the re-establishment of overtime shifts, upon which great hopes for a material increase of the output had been staked. The Ruhr miners consented to work six hours per week in excess of the regulation working time in overtime shifts of two hours, three days a week. The result is so far strongly disappointing. The increase of output compared with August was in September only 7,000 tons per day instead of the 50,000 tons expected.

GERMAN COAL PRODUCTION
(METRIC TONS)

	First Nine Months of—		
	1922	1921	1913
Bituminous	99,071,000	100,602,000	130,177,000
Lignite	101,304,000	90,922,000	64,132,000
Coke	22,030,000	20,761,000	22,769,000
Bituminous briquets	4,090,000	4,276,000	4,406,000
Lignite briquets	22,122,000	21,237,000	50,974,000

Although production of bituminous coal has increased since last year, the total appears less on account of the detachment of Polish Upper Silesia. A survey of this situation shows that hardly any change has taken place in the supply to the interior of Germany. The coal shipments from the German part of Upper Silesia average 100,000 tons per week, and from the Polish part 170,000 tons per week. The shortage which actually exists in the country is due to the grown consumption. Under present conditions the coal production of the country is inadequate, as evidenced by the increased imports, which are a heavy burden on the strained financial situation of the country. The state railways have from May to Dec. 1 required 3,374,000 tons, chiefly British coal; gas works, 487,000, and electricity works, 208,000 tons. The problem of the day is to obviate the disastrous imports or reduce them to a minmum by increased production.

During October, the output has increased to an average of 33,000 tons per day, netting a surplus of 22,000 tons over the August production. Nearly 80 per cent of the miners took part in overtime work during that month. The lowered efficiency of the miners is due to the constant rise in the cost of living, which is keeping the question of wages in a continued state of unrest.



Coal Paragraphs from Foreign Lands

GERMANY—Production of coal in the Ruhr region during the week ended Nov. 11 was 2,033,000 metric tons, according to a cable to *Coal Age*. The output for the previous week was 1,751,000 tons.

ITALY—The price of Cardiff steam first is now quoted at 39s. 9d. on the Genoa market, according to a cable to *Coal Age*. This compares with 40s. 3d. in the preceding week.

BELGIUM—Market firmness is everywhere becoming more marked. Orders are abundant, both for domestic and industrial coals. Sales are active and there is a good deal of delay in consignments. Demand for coke is strong owing to foreign purchases.

Hampton Roads Pier Situation

	Week Ended— Nov. 16	Nov. 23
N. & W. Piers, Lamberts Pt.:		
Cars on hand	509	484
Tons on hand	31,350	31,437
Tons dumped	67,730	70,038
Tonnage waiting	15,550	3,100
Virginia Ry. Piers, Sewalls Pt.:		
Cars on hand	840	954
Tons on hand	51,800	58,450
Tons dumped	81,662	79,967
Tonnage waiting	10,527	17,000
C. & O. Piers, Newport News:		
Cars on hand	481	382
Tons on hand	24,050	19,100
Tons dumped	30,966	38,759
Tonnage waiting	80	12,270

Pier and Bunker Prices, Gross Tons

PIERS

	Nov. 18	Nov. 25†
Pool 9, New York	$7.50@$7.75	$7.50@$7.75
Pool 10, New York	7.00@ 7.25	*6.90@ 7.10*
Pool 11, New York	6.25@ 6.75	*6.00@ 6.25*
Pool, 9, Philadelphia	7.45@ 7.80	7.45@ 7.80
Pool 10, Philadelphia	7.00@ 7.15	7.00@ 7.15
Pool 11, Philadelphia	6.60@ 6.80	6.60@ 6.80
Pool 1, Hamp. Roads	7.75@ 8.00	7.75@ 8.00
Pools 5-6-7 Hamp. Rds.	7.50@ 7.75	7.50@ 7.75
Pool 2, Hamp. Rds.	7.75@ 8.00	7.75@ 8.00

BUNKERS

Pool 9, New York	$7.90@$8.15	$7.90@$8.15
Pool 10, New York	7.40@ 7.65	*7.30@ 7.60*
Pool 11, New York	6.65@ 7.15	6.40@ 6.75
Pool 9, Philadelphia	7.75@ 8.05	7.75@ 8.05
Pool 10, Philadelphia	7.30@ 7.40	7.30@ 7.40
Pool 11, Philadelphia	6.85@ 7.10	6.85@ 7.10
Pool 1, Hamp. Rds.	7.75@ 8.00	7.75@ 8.00
Pool 2, Hamp. Rds.	7.75@ 8.00	7.75@ 8.00
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	43s. f.o.b.	*42s. f.o.b.*

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Nov. 18	Nov. 25†
Admiralty, large	28s.@28s. 6d.	28s.@28s. 6d.
Steam, smalls	16s.@17s.	16s.@17s.
Newcastle:		
Best steams	25s.3d.@27s.	*25s.@25s.3d.*
Best gas	24s.@25s.	24s.@25s.
Best bunkers	23s.@23s.6d.	23s.6d.@24s.

North Atlantic

Market Has Strengthened With Tightening of Supply

Car Shortage and Slow Delivery Advance Spot Values—Release of Lake Tonnage Counterbalanced — Screened Bituminous Readily Taken as Substitute for Anthracite.

Tightening of the supply has strengthened the market. Cars are so short and deliveries so slow and uncertain that values for spot tonnages have advanced, especially on good grades. Individual cases of acute car shortage further complicate the situation, as producers refuse to cut prices on uncertain future loadings. The poor car supply has so far overbalanced the release of some Lake tonnage. Buying is increasing slowly, but inquiries are numerous, showing that the trend of demand will soon be stronger.

Screened bituminous coal is finding a more ready market as a substitute for anthracite. The cold weather is inducing many consumers to place orders for soft coal and prices for prepared sizes are strengthening daily.

NEW YORK

Irregular car supply, in the opinion of some local houses, caused a slight advance in quotations here. Further stiffening is looked for by the middle of the week. Conditions were better and inquiries were received in greater volume.

High-grade coals are quickly absorbed, operators in some instances being booked ahead to April 1 on the present basis of car supply.

Screened coal is being looked upon with favor here. Several local houses have been sending considerable nut and stove sizes to nearby towns, one firm, shipping the latter size, claiming they have been compelled to refuse orders. One cargo of Welsh anthracite was reported as arriving here during the week.

Southern coals are not coming forward in large volume. There were 1,468 cars at the local terminals on Nov. 24, mostly of Pool 10 and 11. Very little Pool 9 was to be had here, operators being heavily booked for it.

PHILADELPHIA

The car supply still holds back production and shippers are loath to make any promise whatever of prompt shipment. The car shortage this week has has made it somewhat difficult for producers to get forward full shipments of high-grade coals on contracts.

There is still a show of increasing demand for bituminous as a domestic fuel. Some local retailers have bought screened gas coal around $7 at mines. Dealers who handle the low-volatile, best grades of Pennsylvania steam coals, find that while it is difficult to make initial sales on account of the fine coal, they get better reports as it is tried out.

The railroads are still actively in the market for motive power fuel and with assigned car orders are able to keep ahead of current consumption and send some into stock.

At Tide there is no activity out of the ordinary. Two clearances for Havana were made last week. It would seem that normal movement is being resumed, especially with the old-time shippers.

Market prices have been held firm. Some had thought with the near approach of the Lake closing an extra amount of coal would be thrown on this market, with consequent lower prices, but it would seem that the car supply situation has overbalanced this.

BALTIMORE

Dealers say that the present conditions indicate a large increase in the demand and that in view of the scarcity of the better grades it will be necessary for the buyers to satisfy themselves with the lower qualities of coal. It is difficult to secure any of the better grades and it is impossible to guarantee prompt shipments of any character.

With the cold weather many of those who had claimed they were holding off for a reduction in price are now endeavoring to have their wants supplied at the prevailing prices.

To supply the wants of consumers is not an easy task owing to the car shortage on the Pennsylvania and B. & O., which is daily causing the situation to become more and more complicated.

The importation of English coal has discontinued and there appears to be but little likelihood of any renewal of this trade. Even in the face of the present conditions one cargo has been sent to Cuba and another to Porto Rico from Baltimore during the last ten days. There have been ten vessels, consisting of nine steamers and one schooner, to leave Baltimore since Nov. 6 in the New England trade.

FAIRMONT

Except where mines are loading railroal fuel and for the Lakes, much trouble is being experienced in securing enough cars to insure regular operation. Tidewater shipments seem somewhat heavier, notwithstanding weakness in the Eastern markets. In view of the higher price prevailing in Western markets, coal is being shipped to points west of the Ohio River whenever that is possible.

UPPER POTOMAC

Production continues on a large scale in the Upper Potomac and Georges Creek field. It is larger on the Thomas Division of the Western Maryland than on any other railroad division. In Georges Creek territory despite a continuance of the strike on the part of some of the older miners, there are approximately 500 men at work and that number is being daily augmented.

CENTRAL PENNSYLVANIA

During the week ended Nov. 19, production amounted to 19,849 cars or a daily average of 3,308 cars, as compared with 17,287 cars in the week previous. The production from Nov. 1, to 19, inclusive, was 48,603 cars, while during the corresponding period in October 46,805 cars were loaded. There has been little or no change in prices.

Operators in Clearfield and Cambria, away from the main railroad lines, are complaining of car shortage. One operator with mines in both places declared that the car shortage has knocked the bottom out of business and it is impossible to hold the men. Under the present conditions, operators contend that they are working at a great loss.

West

KANSAS CITY

The so-called "buyers' strike" and recent warm weather caused the announcement last week of a cut of from 50c.@$1 on Kansas lump and nut. Operators, at the time they announced the reduction, predicted it would be only temporary, and that, with the arrival of cold weather and an increased demand, the price will advance. They are getting between 40 and 50 per cent running time nowadays.

Present quotations for Kansas coal are: Lump, $5; mine run, $3.50; nut, $4.50; screenings, $2.50. Arkansas semi-anthracite is selling at $6 for lump and $4 for nut. Missouri coal is quoted $4.50 for lump and $3.50 for nut.

DENVER

With mild winter weather in Denver coal prices are evenly balanced without much sliding up or down the scale. The car shortage still hampers many mines. However, between 3,000 and 4,000 men more than usual were employed in the Colorado mines during October and production totalled 900,000 tons which is the most the state ever produced in a month.

All of the producing counties except Routt and Fremont, show increases, and are led by Las Animas and Huerfano counties. The car shortage and strike during the summer are believed primarily responsible for the heavy decrease of production in Routt and Fremont counties, except for a period of thirty days when the Moffat road was blockaded at a tunnel.

SALT LAKE CITY

The car situation is still very bad but some relief is expected at an early date. The weather has modified and retailers are still able to supply all demands. With the car shortage this would not be possible, even with warmer weather, were coal being bought for storage. Many consumers are ordering tons and half tons at a time. Lump and screened slack are the sizes in greatest demand.

Anthracite

Crisis Impending as Cold Weather Appears

Low Retail Supplies Force Householders to Take Substitutes—Screened Bituminous Moves Better in East—Briquets and Coke Bring Fancy Prices — Companies Promise Early Relief—Steam Circular Reduced.

Cold weather is precipitating a crisis in the anthracite trade. Retail supplies are nearly depleted and householders are forced to take in substitutes. In the East screened bituminous coal is moving better and briquets and coke sell at fancy figures.

Companies promise immediate relief, however, now that they have made an impression on the Northern demand. Independent operators have increased their prices and even pea coal is selling at close to $10. Steam sizes are in better position, but one large company has cut its circular 50c. to more quickly reduce the present oversupply.

PHILADELPHIA

The consumers' need for fuel has become more acute with the coming of the cold weather. Unless prompt relief is given in the way of shipments a crisis is bound to result. The companies have finally promised the dealers to make shipments from Dec. 1 on, as the government has relieved them of some of their obligations to the North. The retailers continue to take orders, but only subject to their ability to make delivery.

The rumors of increased independent prices have now turned into reality. Under the circumstances, $16 for coal at retail will be quite common from now on.

Dealers handling briquets report an active demand, with the price around $14. There is also an increasing use of byproduct coke, which is selling at the ovens in a mixed pea and nut size for $7@$8.50. Retail prices on this coke runs $13@$14.

The colder weather has injected some improvement in steam sizes, but not sufficient to take up the slack. Buckwheat is still readily obtainable at $3.25@$3.75, with rice and barley available at last week's quotation, although barley shows some signs of being less free.

BALTIMORE

Snappy weather has caused a heavy drain on consumers' bins and the one- or two-ton lots which were furnished to the householders earlier in the season are now nearly depleted. Dealers are not getting sufficient amounts to enable them to meet the urgent demands that are being made upon them. A substitute will have to be used as the cold weather increases in its intensity and many of those who have held off from soft coal will be forced to use it. The retail price has not changed since September.

There was a large decrease in the amount of hard coal received here in November as compared with October. During the entire month of October 1,479 cars arrived, while up to Nov. 24 there had been but 700 cars brought to Baltimore. Like the bituminous coal, the trade is severely handicapped on account of the car shortage.

BUFFALO

The supply is so disappointing that the advice now is that, as so much substitute fuel must be provided, the thing to do is to make up the deficiency by laying in briquets, coke, soft coal and steam sizes of anthracite or wood. Sealed box cars are shipped this way to keep people from seizing the coal on the way. At the same time many towns are without any sort of fuel, according to report.

Meanwhile the Lake trade is about to close for the season. Shipping agents appear to think that no effort will be made to keep it up till the Lakes are closed by ice, though grain will continue to come down as long as it is possible to move it. Loadings at the Lake last week were 110,100 net tons, of which 48,800 cleared for Duluth and Superior, 8,000 for Ft. William, 2,800 for Marquette on Lake Superior, 24,300 for Milwaukee, 10,000 for Chicago, 7,700 for Manitowoc, 6,800 for Sheboygan, and 1,700 for Menominee on Lake Michigan.

NEW YORK

Steam sizes are in better shape but are not moving as rapidly as desired. One of the large producers, it is said, is cutting the regular circular on buckwheat, rice and barley 50c. per ton. It is hoped in this way that movement will be stronger and that the congestion now existing in these coals will be somewhat lightened.

Closing of Lake navigation to domestic coals is being anxiously awaited by the local trade. Retail dealers' stocks are at a minimum. Consumption was much heavier last week because of colder weather.

Many dealers continue to enforce the rule of the State Fuel Administration that consumers when ordering domestic coals include in their order a proportionate share of the steam sizes. Considerable buckwheat has been taken care of in this way.

While most of the large independents are asking about $10.50 as the maximum for the domestic sizes, it was said that some of the smaller operators were quoting as high as $12 to line buyers. It is not believed that any of the high-priced coal is coming here.

The surplus of steam sizes at the railroad terminals on the Jersey side of the river is being rapidly reduced. Announcement was made by the State Fuel Administration that during the week ended Nov. 22 the usual supplies of 50,000 tons had been cut 16,000 tons because of the increased demand.

BOSTON

The heavy volume of prepared sizes going forward to the Lakes has kept this market for the most part almost starved for continuing supply. Dealers are looking forward anxiously to see whether an increased tonnage for New England will actually materialize.

In the retail trade there is no change worth reporting. The fuel functionaries are plastering the public with advice to get substitutes while the public goes serenely about its business of using anthracite sizes and acquiring an advance supply as opportunity offers. The impression that people sit idly by while their plumbing freezes is a myth.

South

VIRGINIA

Production was increased during the first half of November owing to better transportation conditions. Production is larger on the Interstate than on any of the other roads penetrating this region. There is also a somewhat more diversified market, with the demand stiffer at Tidewater. Prices too are on a somewhat higher level.

BIRMINGHAM

Carriers are making little progress in providing the needed equipment for moving the production of the mines. Release of open-top cars from the priority use of the coal mines is expected to further curtail the number of cars available, as there is apparently no avenue at present from which this loss can be recouped.

Steam inquiry is lacking in strength and volume. Consuming industries are only buying what is needed for the immediate future, presumably expecting prices to take a further slump. Demand from domestic sources is good. Dealers nowhere have stocks of any consequence, and those having contracts are not receiving their monthly quotas. Some yards in the Birmingham district are entirely clean.

Quotations have not changed during the past week, both steam and domestic prices being practicably stable. Productions during the week ended Nov. 11 was 345,000 net tons, or about the same as the previous week.

TORONTO

Receipts of anthracite continue very light and dealers are frequently refusing to accept orders—some of them eking out small supplies by mixing nut and pea coal. Many consumers are using coke which is retailed $16.90, and a number are burning soft coal. Dealers are anxiously anticipating the close of navigation when it is hoped that the situation will be relieved.

Bituminous is plentiful but prices for carload lots, f.o.b. destination, continue variable, ranging $8.75@$9.75. Pennsylvania smokeless is $9: steam lump retails at $13.25 and domestic bituminous at $13.50.

Chicago and Midwest

Screenings Demand Steady But Prices Do Not Soar

Reduced Output and Some Stock-Pile Buying Stimulate Steam Market—Snappy Weather Has Small Effect on Domestic Trade.

In spite of the cold wave which swept down out of the North about the middle of last week, the domestic market did not liven up much in this region. Instead, steam buyers furnished all the interest there was. This put just enough life into the screenings market everywhere except St. Louis to absorb about all the screenings available.

Many mines have closed down because of flat domestic market, thus reducing the volume of steam sizes offered. Kentucky is full of unsold coal, especially in the western field where car supply is growing better. Eastern Kentucky coal is spreading into many markets now that Lake shipment is stopping.

CHICAGO

Screenings remained the headliner in this market at the end of last week. There is no crying demand for this small steam coal, but interest in it continues to freshen little by little for two main reasons. First the slackening of call for domestic sizes over a period of two weeks or so has shut down a number of mines that had been dumping screenings on all Midwest markets, thus curtailing the volume of steam coal available and second, some of the heavy steam consumers continue gingerly to buy a bit more than their day-by-day demands require.

Southern Illinois is getting the bulk of the business. Mines that produce high class coal and are equipped to prepare it excellently are still getting $3 on certain country contracts but no spot screenings have sold that high in weeks. Good 2-in. usually brings $2.25@$2.40 and 1¼-in. sells generally for $2.25 though there is some shading to $2.15. Poor grades from the southern field range from $2 up. Other fields' screenings run down to $1.50 for Standard district coal. Indiana steam is moving into this market in increasing volume. The freight rate advantage makes it a strong competitor.

Domestic demand continues weak. Most local yards and some in the country are fairly well stocked and it will take a week of the present snappy weather to stir up a good lively demand. The big operators are clinging closely to $5.50 for Southern Illinois lump and egg and are finding just enough market to absorb the output. The lesser operators in the same field have shaded as much as $1 at times in order to move coal on certain troublous days. Lump from other Illinois fields ranges down to $3. These are days when operators who have spent thousands of dollars in past years advertising the name and quality of their output are cashing in on that investment.

A slight advance in anthracite has been noticed here. This amounts to only 20c. or 30c. on the circulars of those companies whose prices have been lowest. Other company quotations remain unchanged. Very little hard coal is reaching here except through two shippers. Independent prices are too high to win any Chicago business. Railroad congestion and other obstacles continue to choke off the volume of smokeless fuel.

ST. LOUIS

Mild weather up to the middle of last week practically stopped domestic buying, not only in the city but in the surrounding territory. The colder days that followed had only a slight market effect, for all dealers have yards full of coal to be unloaded. Most of it is high priced. Although the mine prices have decreased dealers cannot comfortably reduce retail prices. The public is buying only from day to day, still expecting a drop in price. The local steam trade is easy. Very few plants are storing. They also buy from day to day.

There is a falling off in the country tonnage. Small plants are going to oil and electricity. Even in St. Louis there has been a large business done in kerosene and oil burning devices for residences. Complaint is made by the city that the smoke nuisance this year has exceeded that of any previous years.

A large tonnage—perhaps 400 tons a day—is also coming in by trucks from the mines between East St. Louis and Belleville. There have been no smokeless receipts and only 1,000 tons or so of anthracite during the week. Hard coal has advanced 50c. and coke gets more plentiful now that gas coal is reaching here in some volume.

SOUTHERN ILLINOIS

The car shortage—a plague a month ago—is a blessing now. It has helped to maintain prices in the Carterville field, in the face of mild weather and no demand. The car supply has shown considerable improvement but there is still a shortage. Mines are averaging 2 and 3 days a week. The market is gone on steam sizes temporarily. Domestic prices are maintained at $5.50 by the association operators, but the independents are down to as low as $4.50. Screenings range $2@$2.50, but there is no demand for anything and railroad business that two months ago was sneered at is madly sought.

In the Duquoin and Jackson County field prices are softening. The car supply on the Illinois Central has improved. The Mt. Olive district has a surplus of everything and some mines in this field are idle on account of no-bills. The tonnage to Chicago and the Northwest is fair on domestic sizes, but slow on steam, and St. Louis has almost quit. Prices seem to be maintained, however. Standard district operators are trying to run their mines regardless of loss. There is very little demand for Standard and railroad tonnage is light, excepting on the Mobile & Ohio which is storing.

WESTERN KENTUCKY

The market here, faced with a much better car supply than it has had in months, and with a slow demand for all sizes, is having trouble in selling coal, and prices have been working steadily lower. It is reported that some high cost mines are closing down.

It was reported on Nov. 20, that there were approximately 120 cars of unsold fuel on tracks at western Kentucky mines. Demand for lump has been a shade better the past few days because of freezing weather and this has created a little demand from small steam consumers.

Demand for screenings from industries continues fairly good, and production of lump is creating a fair volume of screenings. Lump is quoted at $3.50 @$4; mine run, $2@$2.50; screenings, $1.25@$1.75. Most of the lump is reported as selling at around $3.75, and mine run, $2.25.

There has been a big improvement in car supply. The average for the month up to Nov. 20, showed the I. C. at 30.3 per cent; L. & N., O. & N. division, 22.5 per cent and Henderson division, 34.7. This is enough, for mines are not requesting many cars.

LOUISVILLE

Slackening of Lake movement was followed by weakening markets due to large tonnage from eastern Kentucky, West Virginia and elsewhere being offered in the open market. Prices of eastern Kentucky coal are lower, and are expected to go down considerably, as operators will be forced to screen coal in order to get prepared business.

Retailers here for months have been disgusted with the tactics of eastern Kentucky operators in holding lump at $2 or more above mine run, thus preventing retailers from stocking and handling eastern Kentucky coal. Western Kentucky lump has dropped to $3.50 @$4 at the mine, and is selling here at $2 or more under eastern Kentucky lump. Cold weather last week put a trace of vigor into the local market.

Some of the coal men are looking for sharp breaks in eastern Kentucky prices. Right now eastern Kentucky lump is around $6@$6.50; block, $6.50 @$7; mine run, $3.50@$4, and screenings, $3.50@$3.75.

INDIANAPOLIS

Colder weather has stimulated the domestic trade a little. However, dealers declare the demand is nothing to what it should be and they are becoming worried over a possible congestion in case of severe weather. Screenings continue to hover around $2 with a slight increase in demand and an occasional sale at as much as $2.25. Prepared coal is bringing $5@$5.50 at the mines and there is a little stronger tendency.

A gradual expansion in industry is reported from nearly every corner of the state. This should increase coal demand. Much displeasure is expressed by the public over coal prices.

Eastern Inland

Markets Are Without Life Pending Close of Lakes

Prices, Except for Domestic, Soften—Buying Movement Expected After Close, Consumers Awaiting Effect of Diverted Tonnage—Trade Sees Ally in Winter Weather.

Lifeless markets are preceding the closing of the Lakes. All prices except that of domestic coal are softening and if demand does not pick up soon no-market losses will again appear in the near future. Dec. 5 should see the final Lake shipments from the mines, however, and a substantial buying movement is indicated after that, as the consumer's tardiness is attributed to the belief that the diverted tonnage will soften the market.

Domestic movement is increasing rapidly, especially in Ohio, where higher prices have been authorized. Retailers are not stocking heavily but frequent replenishments are being ordered as the consumer is forced into the market by the colder weather.

CLEVELAND

With the slowing down and near approach of the complete ending of the Lake movement, the market for industrial fuel continues hesitant. Coal is getting in better supply and within the next week or so it will be even more ample. By that time it is expected that a substantial buying movement from industrial consumers will get under way. Cold weather is rapidly approaching and many plants soon will find it advisable to increase their stock piles, against January freight tieups.

Prices have been giving ground a shade further. The future course of quotations will be determined by the extent of buying as it develops within the next few weeks. If demand continues dormant, with the increase in available supplies, further declines might result. The trade, however, generally expects improvement.

The retail trade is experiencing a brisker demand. Dealers are now getting more anthracite and supplies of Pocahontas are expected to become much more liberal as the Lake shipments cease. Pocahontas shoveled coal is quoted at $12.34 against $12.75 recently. Anthracite orders are taken at prices at delivery, the range being $14.50@$16.40.

PITTSBURGH

The market has become quiet and prices are off 50c., or more, except for domestic lump. It is difficult to distinguish between cause and effect in connection with the price decline. Mine shipments for the Lake trade are ended, sooner than operators expected. Railroad purchases are greatly reduced, and this may be due to expectation of lower prices or may be assigned as the cause of lower prices now quoted. There is even talk in some quarters of the possibility of production being curtailed soon by scarcity of orders.

It is an hour-to-hour rather than a day-to-day proposition as to cars in the case of most mines. The extreme scarcity explains the curious phenomenon observed for many weeks, of screened gas and gas slack selling at prices making a combination well above the mine run gas price.

The steam coal market is so cut up as not to be very closely quotable, $2.50@$2.75 being probably a fair range at this writing. Youghiogheny gas is down to about $3.25 for mine run, with slack nearly as high and screened, $3.75@$4. Byproduct is not quotable, there having been no transactions of importance in the past few days. Domestic 1¼-in. lump remains quotable at $4.50 but is hardly strong at that figure.

DETROIT

There is still a lack of interest among buyers. There is some business being done every day but the aggregate falls much below the mark which jobbers and wholesalers believe should be attained. The buying is proceeding irregularly and apparently represents the efforts of steam plants to provide only for present needs.

West Virginia and Kentucky 4-in. lump and egg is quoted at $6; mine run is $3.75, and slack $3.50. Hocking lump is $5.50; egg, $5; mine run, $3.50; nut, pea and slack, $2.75. Pittsburgh No. 8 lump is $4.50; mine run, $3.50; slack, $3. Smokeless lump and egg is $8 and mine run $6. Very little smokeless is available.

Domestic consumers who rely on prepared sizes of anthracite are apparently destined for disagreeable times. The daily receipts are smaller than a month ago, averaging about 33 per cent of normal.

BUFFALO

The market sags slowly, but steadily. While prices have not gone off much, it is found that even Pittsburgh, which is always much stronger than Buffalo, has weakened and will no longer insist on former quotations. As a rule Buffalo has steadily refused to pay them and it has used the Allegheny Valley and No. 8 supply to enable it to dictate what it will pay for other coal.

Consumers report that they are offered more coal than they need, so they buy at bottom prices and are satisfied. A few shippers have the confidence of the heavy consumers so fully that they are able to get extra prices for the best coal. To be able to do that a shipper must have a complete knowledge of the quality of all coal handled and he must deliver the quality that he offers. It is not an easy thing to do.

Quotations are $5@$5.25 for Youghiogheny gas lump, $4.25@$4.50 for Pittsburgh and No. 8 steam lump, $3.25@$3.50 for all mine run and $3@$3.25 for slack, adding $3.09 to Allegheny Valley and $3.24 to other coals to cover freight.

COLUMBUS

Lake trade is now practically over. This has released a good deal of coal for commercial purposes. As a result weakness in steam sizes is developing, although the domestic trade is still holding up quite well. The weakness is not sufficient to cause any radical change outside of lower prices on mine run and screenings.

Retailers are buying rather actively and a considerable quantity of prepared sizes is finding its way into retail yards. Consumers are still playing a waiting game, believing that prices will be lower and are thus placing small orders as a rule. Retail prices are generally firm at former levels. Only a small quantity of smokeless is coming into this market.

Steam business is more quiet as many of the larger users have succeeded in building up rather good reserves and are only buying for immediate needs.

EASTERN OHIO

By reason of improvement in the car supply, mines produced more coal during the week ended Nov. 18 than during any week since the resumption of mining in August. Output was 348,000 tons or approximately 56 per cent of capacity, and exceeded the previous week by 75,000 tons. The lowest supply was on the Wheeling & Lake Erie, where only 45 per cent of requirements were furnished.

Activity in the domestic trade is reflected through the retailers' efforts to procure lump coal. It is understood that Pocahontas and other West Virginia and eastern Kentucky domestic fuels are now available in larger quantities than heretofore, but retail yards still find it necessary to ration their trade. Since the allowance by state authorities of 50c. per ton additional on lump produced in Ohio, a greater quantity of Ohio lump is now available.

In the steam trade, operators and jobbers report sluggishness and a disposition still exists to defer storage programs because of expectation that not only a better selection can be made but that lower prices will necessarily result from the cessation of Lake shipping. In fact, with Lake shipping already tapering off, slack and nut and slack and mine run can now be purchased in the open market at figures lower than the maximum set by state authorities.

Receipts of bituminous coal at Cleveland show a slight recession from the record figure established during the preceding week. Total arrivals were 2,119 cars during the week ended Nov. 18; divided; 1,551 cars for industries and 568 cars for retail yards.

NORTHERN PANHANDLE

Car shortage and the difficulty of getting coal moved to market alone stands in the way of capacity production. The trouble is in getting coal through the Holloway yards of the B. & O., one of the principal outlets for the field. Railroad fuel buying is on a large scale.

Northwest

May Embargo Soft Coal To Ship More Anthracite

Failure to Get Hard Coal Allotment Is Driving Shippers to Extremes—Prices Advancing — Competition with Rail Men Is Keen.

The crying demand for the full allotment of anthracite—an allotment which was expected to equal 60 per cent of the normal deliveries—is starting a movement which may soon result in an embargo or partial embargo on the part of Lake shippers against soft coal so that more vessels will be available for anthracite transportation. In order to get the allotment, it will be necessary for boats to bring up 160,000 tons a week until Dec. 15, which is almost impossible.

The call for most bituminous coals is comparatively light. Plenty of Illinois and Indiana fuel is arriving by rail in the southern part of this region and the docks have amassed considerable piles of Eastern coals. Docks are making their usual price concessions in competitive sections, in order to get business, and some rail shippers are meeting their quotations but most Illinois domestic sizes are offered steadily at $5.50.

MINNEAPOLIS

The failure of adequate supplies of hard coal to come along has created considerable alarm. Slightly over a third of the allotment had been received up to the middle of November. The period of navigation has been extended for two weeks.

Any shortage will have to be made up by all-rail shipments. To mitigate the situation, it is proposed to ship from present stores of hard coal to the more extreme points, giving them the advantage of the lake and rail freight rate, as the all-rail rate to such places would be prohibitive.

That the proposition to stop soft coal to the docks is seriously considered, shows how well the various soft-coal mines have made up the undoubted deficit which existed at the time of resuming operations. It has not been accomplished wholly by the Eastern mines. On the basis of the usual dock supplies, there is a considerable shortage. But while the soft-coal tonnage has been moving to the docks, the all-rail shippers of Illinois, Indiana, and elsewhere also have been moving soft coal into this district. They have crowded the dock business until a decidedly short tonnage on the docks looks sufficient to meet current demands for the winter, plus what may and doubtless will be received from the all-rail shippers.

Prices have been demoralized, dock coal selling at close to last year's price and all-rail coal having a wide range of values. Some of the rail shippers insist that they are adhering to the $5.50 price at the mine, but many do not. The mild and open weather, prevailing until well toward December, has undermined the expectations of wholesalers who had counted upon a much stronger market.

MILWAUKEE

The week brought little change in the coal market. Mild weather and fair arrivals by Lake combine to allay anxiety as to the winter supply, and hold the demand in check. Enough anthracite has been received to enable dealers to give almost everybody a small amount, but there will be a rude awakening to the anthracite shortage when the first real cold snap develops.

Anthracite is in for a general advance in price. The ruling retail rate for some time has been $16.50 for egg, carried in, $16.75 for stove, $16.70 for nut, and $14.75 for pea. A leading retail company is now holding egg and nut anthracite at $17.25, and pea at $15.25. The chances are that these prices will soon be charged all along the line.

Thirteen cargoes of anthracite were received in November, the aggregate being 110,639 tons. During the same period 31 cargoes of soft coal, aggregating 258,501 tons were docked. Anthracite receipts since navigation opened, now total 252,753 tons, and soft coal, 2,204,401 tons. Last year 938,329 tons of anthracite and 2,533,833 tons of soft coal had been received up to this time. These figures do not include car-ferry or rail receipts.

DULUTH

Definite announcement has been made by the state fuel administrator that the coal now on dock at the Head-of-the-Lakes will be used for upper Minnesota and Superior exclusively because there will be insufficient anthracite for the Northwest, and the bituminous supply must be conserved. Lower state points and North Dakota will receive coal by all rail, although it is supposed that some of the bituminous on docks will be ordered to North Dakota later.

Anthracite shipments are falling off. Last week, of a total of 44 cargoes received, but four were anthracite. There are 27 cargoes en route and of these but two are hard coal. The available supply is negligible and with householders fighting for it as now, it will be exhausted immediately at the close of navigation.

A recent unofficial survey shows 2,300,000 tons of bituminous on the docks as against about 5,500,000 tons at this time last year. This does not include approximately 1,000,000 tons of bituminous at the steel corporation.

Prices remain firm here. Some report comes from lower state points of weakening prices. This will not affect the market here as cold weather has set in and the ground is white. It is said that the lower prices below are caused by lack of present demand, because of milder weather.

New England

More Coal Now Available And Inquiry Is Stronger

Improvement at Roads Also Shown in Car Supply—Resumption of Textile Mills a Helpful Factor—Price Advance May Turn Eyes Toward Pennsylvania All-Rail Coal.

There is a perceptible improvement in conditions at Hampton Roads. Not only is car supply somewhat better but prices are 25c. higher, and while there is more coal available, inquiry is sufficiently stronger to warrant the steadiness that now seems to prevail. A few agencies were caught with not quite enough supply to meet obligations, and this kind of demand was enough to turn the corner.

There is also observed a slight increase in demand at rehandling points here for shipment Inland and spot prices have advanced from $8.50 to $9.25 per gross ton on cars. As yet there is nothing like broad inquiry, but conditions are somewhat better, due partly to resumed work in the various textile mills.

Practically all the Pennsylvania operators who figure at all in this market are satisfied to get continuing orders on present price levels. The few who felt they saw opening for small advances have now receded and are seeking new business at the same prices that prevailed a month ago. It is noticeable, however, that since Southern shippers have asked more for their output that there is renewed interest on the part of a few buyers in the more desirable Cambria grades.

The railroads have central Pennsylvania operators guessing with respect to car-supply. One day practically a full quota of cars is delivered and then for two or three days none at all. In consequence the shippers are in doubt whether to sell ahead at present prices, or whether to take the market as they find it.

While receipts by water have shaded off the past fortnight, railroad figures show that coal is coming through the Hudson gateways in somewhat better volume. This is due partly to efforts of the railroads themselves to accumulate more seasonable reserves, but is also due to slightly increased buying on the part of industries.

Cincinnati Gateway

Interest Veers Southward From Northern Stodginess

Orders Go to Virginia and Southeastern Kentucky Mines — Empties Return More Freely—Car Accumulation at Lakes Keeps Northern Ohio and Michigan Out of Market.

It is a notable fact that coal flows freely through the gateway in almost any direction. Attention can be drawn to the fact that this week offices in the Queen City are turning to the South and mines in Virginia and southeastern Kentucky that are able to direct their offerings to the Southern markets are being supplied with orders. Since the softness developed here business from that quarter is more desirable and attractive than the stodginess of the North.

Movement of empties to the mines has been freer this week. It also is a prime point of consideration that northern Ohio and Michigan has not been a competitive customer for the past week or two, due to the accumulation of cars at the Lakes. This and the open weather have largely been the causes of values here seeking a lower level.

LOW-VOLATILE FIELDS

New River and The Gulf

New River mines are finding it just as hard as ever to get anything like an adequate car supply, in consequence of which the average mine is not working more than one full day a week. There is not enough coal produced to take care of the general run of contracts so that little is being marketed on a spot basis. The limited production makes it out of the question to ship much coal to Western markets where there is a better demand.

Production is on a little larger scale in the Winding Gulf region, owing to a somewhat better car supply, yet mines are not receiving more than 30 per cent of allotment.

Pocahontas and Tug River

Pocahontas producers are not finding it possible to speed up production in excess of 40 per cent of potential capacity. The N. & W. is not letting much of its larger equipment move to points west of the Ohio River though the open market demand in the West is much brisker than in the East. As a matter of fact, there is little Pocahontas coal being sold on an open-market basis in Western centers, most of the coal being under contract.

Little more than half the potential capacity of the Tug River field is being produced, the shortage of equipment being due to the comparatively small number of empties coming back from Western lines. The output hardly suffices to more than keep pace with standing orders so that the spot movement to Western markets is limited.

HIGH-VOLATILE FIELDS

Kanawha

The field is still forced to plug along with about one full day's work per week inasmuch as the car supply does not amount to more than 25 per cent of allotment. Mines do not find it possible even to keep up with contract orders much less dispose of any coal on a spot basis. In fact, market conditions would warrant a much larger movement to the West. As production costs are so high mine owners claim that it is impossible for them to produce lump at the maximum price of $4.50.

Logan and Thacker

Logan mines are getting a much better supply than heretofore owing to the fact that the C. & O. is trying to make up for a deficiency in the supply of equipment existing since the strike. The larger production after all just about permits mines to catch up with the tonnage for regular customers, there being little or no surplus for spot sale and shipment. There is a better demand for gas coal than for steam grades.

It has not been possible so far to increase production to a point beyond 40 per cent of potential capacity in Williamson and other sections of the Kenova-Thacker district. The product of the field is moving largely to Western markets, most of it on contract.

Northeastern Kentucky

Mines are getting a little better car supply. Production is now at the rate of about 40 per cent of capacity. Larger shipments to the Lakes tended to swell the output, as it was possible to secure the return of cars promptly. Gas coal is in better demand than steam.

CINCINNATI

With all grades of splint and gas dropping down—except the domestic sizes—attention has again been directed to the extraordinary position maintained by the low-volatile coals. Slack has shown a little tendency to weaken with some sales below the $6 mark for the first time in weeks. It is known, too, that some lump coal is getting into the hands of the brokers and their quotations are again appearing. Just as singular is the fact that several of the selling agents continue to take orders at the Hoover prices and that a couple of weeks more will see them caught up on the present bookings unless the weather interferes.

The drop in interest of the takers of byproduct coal has resulted in lowering the price so that the spread is less today than it has been in months. Heavy production of low-grade coals in the steam line and a disposition to cut the price has been reflected by the better grades following suit. Just how far this will go will be largely governed by the weather, which if it continues open for another couple of weeks, may see another quick sliding market. Domestic sizes hold up well even though some of the mines are now specializing in sizes—that is specifying egg, 2-in., lump, and block in their shipments.

Coke

UNIONTOWN

While the coke market, stimulated by the demand from several additional furnaces, is strong, the coal market has been softened by the disappearance of orders from the Northwest for the Lakes trade. The changing status has not been so pronounced as to change prices but a shift upward in coke quotations is expected. A steadily increasing demand since operations were resumed upon a normal basis gives support to the contention that an upward drift is approaching.

Eastern consumers discontinued buying several weeks ago apparently with the expectation of lower prices when the Lakes were closed to transportation. Prices continue at $3 for steam coal and $3.50 for byproduct. Those quotations for several weeks have withstood a steadily decreasing demand and the fact that operators are refusing to close sales below those figures leads to the opinion that the bottom also has been reached in coal prices. A number of cases are known where mines suspended rather than sell tonnage below $3.

CONNELLSVILLE

Prompt furnace coke is up 50c., reflecting the absorption of considerable tonnage by five blast furnaces resuming with Connellsville merchant coke. The market is now quotable $7.25@$7.50. This is for odd lots picked up in the open market. Operators having arrangements to supply furnaces regularly, at a price to be adjusted at intervals, did not recognize the low spot market. Contracts to the end of the year, involving a regular supply of good coke, could hardly be placed at below $8, if even at that figure.

With pig iron sagging furnacemen regard coke as entirely too high but they exert very little actual pressure on the market because in most cases they are covered to the end of the year at higher prices, $8 and upward. There is some tentative inquiry out for first quarter or first half, but it is altogether improbable that producers and consumers will be able to get together. Foundry coke is a shade easier, at $7.50@$8. Demand continues rather light.

The *Courier* reports production during the week ended Nov. 18 at 119,850 tons by the furnace ovens and 62,530 tons by the merchant ovens, a total of 182,380 tons, an increase of 5,500 tons.

BUFFALO

Coke has become very scarce, as consumption by the local furnaces now exceeds the amount turned out by the byproduct ovens. Buying in the open market has been resorted to. Jobbers quote Connellsville foundry at $8, furnace at $7 and stock at $6, with a small supply of chestnut at $10 for domestic use. No byproduct coke of local make is to be had here for house consumption.

News Items From Field and Trade

ALABAMA

John W. Porter, vice-president of the Alabama Company, in charge of sales, has been placed in charge of operations, succeeding **Harry W. Coffin,** resigned.

The County Coal Co. will electrify its mines and install Marcus screens for grading its output, according to announcement of C. C. Copperstone, general manager, Birmingham.

COLORADO

James Dalrymple, state inspector of coal mines, is authority for a report that the employment of coal miners in Colorado reached a record mark in October, there being 15,055 engaged in the industry. This registers an increase of 3,000 to 4,000 over the usual number, and is the first time since the establishment of the inspector's office that more than 15,000 have been employed. Records of coal production give October 900,000 tons, an increase of approximately 100,000 tons over September, and the first ten months of 1922 a lead of 189,312 tons over last year.

CONNECTICUT

The City Ice & Coal Co., Bridgeport, large coal retailers, has increased its capital stock from $300,000 to $500,000.

ILLINOIS

The office of the **Henderson Coal Co.** near O'Fallon was burned recently. The origin of the fire is suspected to be incendiary as a few weeks ago the barn at the same mine was burned.

The Condit Coal Co., of Centralia, recently moved into new offices in that city. The company recently completed the erection of a new concrete office building in which the company's business will be located.

The stripping operation at Opdyke, near Mt. Vernon, under the direction of **J. A. Koons, has been stopped** until next spring. The coal when the mine was first started was only 5 ft. from the surface, but as the stripping progressed it rapidly inclined so as to soon be too deep for the shovel employed. The owners now plan to purchase a new and larger shovel next spring together with other equipment and re-open the plant.

The Midway Coal Co., of Ward, has filed papers in Murphysboro conveying its mine property to the **Chicago Fuel Co., Inc.,** Chicago. The mine is located on the main line of the Illinois Central near De Soto and was the scene of a recent disastrous fire. However, the mine is said to have been completely repaired and put in first-class shape since the fire.

The Lemon McKelvey Coal Co. has capitalized with $25,000 at Sparta, to operate an inland mine a few miles back from Sparta.

The washer at mine No. 8 at Clifford of the **Consolidated Coal Co.** of St. Louis was completely destroyed by fire on Nov. 16.

The Shuler Coal Co. has begun mining coal at Alpha, with three eight-hour shifts at work. A high tension electric line is in and the shaft is down to the seam. Work will be rushed on the new mine day and night until it is completed. A temporary hoist has been constructed. The Shuler company has rights to 10,000 acres of coal lands.

The Sunnyside Mining Company, Herrin, has announced that it will soon launch a $450,000 bond issue and has filed with the circuit clerk at Marion, a trust deed for that amount with the Chicago Trust Co. The company will use the sum for further development of its mining properties and will install a large amount of new machinery and equipment.

The Buckley Coal Co., Springfield, has just been incorporated and capitalized at $100,000. The headquarters of the new firm will be at 626 Reisch Bldg. and is composed of the following incorporators: Carl H. Elshoff, E. H. Buckley and George W. Schwaner. The company will mine and deal in coal and coal lands.

The Sharon Coal Mining Co., Georgetown, has been incorporated with capital of $200,000 by Seymour A. Rhode, Louis Clements, Robert Pettigrew and John Donaldson. The company will engage in general mining.

Incorporation papers have been issued to the **Prairie State Coal Co.,** with offices in Chicago. Those interested in the new company are James J. Hickey president, coal broker, Springfield; W. J. Smith vice-president. Chicago, formerly of the Holland Coal Co.. and W. M. Ryan secretary, Springfield. Mr. Hickey will continue his coal brokerage business in Springfield.

The Caloric Strip Mine, formerly the Southern Illinois Coal Co., will open for operation sometime in December. A report that the Peabody Coal Co. was to operate this mine was erroneous. This is one of the largest strip mines in southern Illinois. Robert Sherwood is president of the Caloric Coal Co.

INDIANA

The Latta Coal Mining Co., with a capital stock of $50,000 has filed articles of incorporation in Terre Haute. Charles A. Crawford; John F. O'Brien and Bert Beasley are the incorporators of the new company, which is organized for the purpose of mining and selling coal.

Provision for the purchase of 325 coal cars and other equipment for the Cincinnati, Indianapolis & Western R.R. has been made in the organization of a subsidiary company, known as the **Cincinnati, Indianapolis & Western Car Equipment Co.** Orders for the equipment have not been placed, according to one of the directors of the company. The new company has a capitalization of $450,000, of which $300,000 is preferred stock. F. J. Goebel, secretary of the C. I. & W. is president of the subsidiary corporation.

Officials of **Rose Polytechnic Institute,** at Terre Haute, say that within the next year or two **mining engineering will be included in the course of study.** The department will be placed on an equal footing with the other five departments. The Department of Mines will co-operate with the new department, it was said. R. L. McCormick, professor of applied mechanics, will be asked to take charge of the new course. He has been active in mining engineering for the last 30 years and is conversant with the problems of the industry.

The Chicago Heights Coal Co., an Illinois corporation, has qualified to do business in Indiana. A total of $50,000 of the corporation's capital stock is represented in Indiana.

A "windy" shot at the Mohawk mine near Linton recently destroyed the framework of the tipple. Prior to the firing of the shot the hoisting engine broke with a loaded car in the tipple. The engine room and the cages were badly damaged. The mine will be idle for six weeks for repairs.

The supply of coal cars to mines along the Southern in Indiana **is improving,** according to **Harry W. Little,** manager of the Southern Indiana Coal Bureau, who has completed the compilation of figures representing the operations of the 18 mines along that railroad last week. The Big Four and the E. S. & N. traction line furnished a total of 196 cars over the Southern, making an average of 39.2 per cent of the cars ordered. The mines were able to work 254 of the 768 potential running hours, an average of 33.1 per cent of the running time.

A trunk line connecting the Oatsville coal field with the Big Four will be built next summer and as soon as this is completed the **Pike County Coal Co.** will begin work on two big shifts near Oatsville. The company will open two 10,000-ton mines. It controls more than 5,000 acres of land in western Pike County.

The Primrose Coal Producing Co., of Indianapolis, has increased its capital from $200,000 to $300,000.

IOWA

Unusual activity is manifested in various sections of Iowa in **prospecting for coal.** A thick vein was penetrated in the vicinity of Linn Grove, Buena Vista County. In Clay county it is said that coal in paying quantities has recently been discovered. What promises to be the largest field in Iowa is being developed at Herrold, a station just outside the limits of Camp Dodge. Prospectors have located coal under most of the land formerly occupied by Camp Dodge during the days of the war. In Page County the discovery of veins of varying thickness indicate large deposits. In the vicinity of Waukee, Dallas County, rich mines have been opened in recent years.

KENTUCKY

John Hoffman, president, and **L. F. Koring,** of the Kentucky Fuel Co., Cincinnati, visited their mines in Bell County and those of their affiliated corporations, the Leg Mountain Coal Co., recently.

C. A. Johnson of the Barker Fuel Co., Louisville and Pineville, was a visitor in the New York market last week.

Texas and Kentucky people have organized the **Baum Coal Co.,** with a West Virginia charter, but for the purpose of operating in the Kentucky field, this company having a capital stock or $300,000. The office of the company is to be at Lexington. Largely identified with the new company are: H. H. Cobb, R. J. Edwards and C. S. Arnold, of Fort Worth, Tex., C. P. Munch and W. G. Dening, of Lexington.

MARYLAND

It has been possible for the **George Creek Coal Co., Inc.,** to resume operations at its Lonaconing plants at Lonaconing, with about thirty men who are working on a non-union basis. Three cars of coal a day are being loaded, but the company is sanguine of being able to increase production in the near future. Sixty men promised to report for work, but only half that number reported for duty. The mines of the company had been closed down for several weeks. The Georges Creek Company endeavored to continue operations despite a strike and met with a fair degree of success until miners began to receive black hand letters.

The George's Creek Coal Co., Inc., has filed a bill in the Circuit Court of Allegany County for an injunction to restrain Francis J. Drum, president District No. 6 U. M. W., Midland and Frostburg locals, and seventy-four individuals from interfering with the affairs of the company, or with employees, or persons who wish to take employment.

MASSACHUSETTS

The New England Coal Co. has started work on a new coaling plant in Waltham. The plant includes a 2,000-ton field storage shed and a 1,000-ton timber coal pocket, with elevating and conveying machinery, track hopper, elevator, etc.

MICHIGAN

To continue in operation the wholesale and retail coal business established in Detroit in 1903 by the late R. L. Aylward, who died in February, the **R. L. Aylward Coal Co.** has been incorporated in Michigan with capital stock of $80,000, all paid in. The officers are: President and treasurer, Harold N. King; vice-president, Helen C. King; secretary, Elizabeth Aylward. Mr. King has been associated with the business since its beginning.

MINNESOTA

The Minnesota Fuel Administrator has received two urgent requests for hard coal from small towns, one from the extreme southeastern part of the state, at Lewiston, and the other in the south central part, at Cleveland. Each request declared the need of hard coal to be urgent.

An offer from a North Dakota lignite operator has been received by the Minnesota Fuel Administrator, **to furnish 100 tons of lignite a day** at $3 a ton at the mine.

NEW YORK

The Buffalo office of the branch of the **Maher Collieries Co.** of Cleveland, about to open, will be under the management of **O. E. Southard** from that city, with **F. B. Shoendell,** salesman.

OHIO

Frank Collins, who has been connected with the H. W. Jenkins Coal Co., for a number of years has resigned and taken an interest in the **States Coal Co.,** a jobbing concern in Columbus.

The Sunday Creek Coal Co., has secured an injunction against the **Big Bailey Coal Co.,** of Nelsonville, to compel the latter to carry out a contract permitting the Sunday Creek Coal Co., to handle its output. During the past few months it is claimed that the Big Bailey Coal Co., has been disregarding this contract.

The preparation of storage facilities for keeping large reserve stocks of coal on hand near the mine is the plan of the **Cleveland & Western Coal Co.** for meeting future strike emergencies. The storage plant will adjoin the new mining operation of the company, which it is said will be the largest single coal mining operation in the world, at Powhattan, in the Belmont County field of eastern Ohio.

Mining men who have been in Cincinnati recently were: **E. L. Michie,** manager of the Oakland Coal Co., at Hugheston, W. Va.; **Ed. O'Toole,** vice-president of the Central Pocahontas Coal Co., Welch, W. Va.; **James A. Hensche** of the Flanagan Coal Co., Welch, W. Va.; **J. H. Bowen** and **D. C. Jones** of Huntington, W. Va.; **W. E. and David E. Pritchard** of Bramwell, W. Va.; and **E. L. Gamble** of the Lick Branch Coal Co., of Jackson, Ky.

Howell Davis, president of the East Tennessee Coal Co., and **Kenneth McGuire** of the Harlan Coal Co., were recently in the Cincinnati market.

The New Haven Mining Co., Nelsonville, has been chartered with a capital of $15,000 to mine coal by W. E. Evans, Albert Evans, Floyd Parry, Ramy Perkins and Elmer Guess. All of the incorporators are from Carbon Hill.

The Bell Coal Co., Columbus, has been incorporated with a capital of $20,000 to operate a retail business. The concern was formerly conducted as a partnership. Incorporators are Raymond H. Bell, Hope A. Bell, William B. Grove, Raymond H. Bell, Jr., and Henry A. Bell.

A deal which will **open a great acreage near Pennington Gap, Va.,** has been under way between officials representing the Blue Diamond Coal Co. and other Tennessee corporations and Dr. Bachman representing the Peabody estate, which holds title to the property. Conferences have been held in the Cincinnati offices of the Peabody company at which James Bonnyman, a large operator of Birmingham, Ala., H. C. Williams, president of the Campbell Coal Mining Co., of Knoxville, Robert S. Young, of the Blue Diamond Co. and S. Geratz, of Knoxville, who holds certain leases, were present.

Recent visitors to the Cincinnati market from the fields were **C. B. Rose,** of Hazard, Ky., **George Merryman** of the Logan Fuel Co., Charleston, W. Va., **R. Freiberger,** of the Fire Creek Coal Co., and **Robert S. Young,** of the Cabin Coal Mining Co.

The state emergency fuel bill is responsible for Ohioans paying from $2 to $3 more per ton for coal than if the law had not been passed, the attorney representing the **Ohio Collieries Co.** and the **George M. Jones Co.** in their suit for a restraining order by which the state fuel administrator, Governor Davis, and other state officers would be prevented from enforcing the law, declared at the opening of the hearing in the federal court. They also charge that the law is full of threats and coercion which interfere with the I. C. C. activities and cannot possibly be given sanction of the courts, because it failed to do what it was meant to do—obtain for Ohioans coal at a reasonable price.

The Timmons Coal Co., Zanesville, has sold its mine No. 3 located at Crooksville to **Terrick, Howell & McHose,** a partnership of Zanesville. The purchasers will increase the output of the mine at once by installing new equipment.

R. V. Johnson, superintendent of purchase of the Ohio Department of Finance, has asked for bids for **about 125,000 tons of coal** to be delivered to the various institutions of the state. The size, except in a few instances, will be mine run. Bids will be opened Dec. 1. A contract bond must be filed with each bid.

Cincinnati's position as one of the leading coal markets was never better shown than by several of the changes and realignments that have been made in the past two or three weeks.

The surprise of the trade came with the announcement that **James Bonnyman,** who has been a power in the Birmingham district for many years had resigned as president of all of his mining, selling and producing corporations and would become chairman of the directorates. This has been followed by an announcement by **Alex Bonnyman,** of Knoxville, that he has resigned as president of the **Blue Diamond Coal Sales Co.** and would become chairman of its board of directors. James Bonnyman will become president of this latter company. The Blue Diamond has extended its ramifications through a deal involving over a half-million dollars through which it acquired the **Crown By-Products Coal Corporation** from the **R. O. Campbell Coal Co.,** of Atlanta. It has leased from the Peabody interests of Chicago 3,000 acres of land at St. Charles, Va., upon which it will immediately start a large development. It continues its holdings in the Liberty Coal Mining Co. and several smaller Tennessee mines. **Fred E. Gore** has been elected vice-president and takes the place of **Calvin Holmes,** who formerly had charge of sales.

The George M. Jones interests of Lundale, W. Va., have announced the consolidation of the various mines and mining corporations that market their output through the **Amherst Fuel Co.** These include the **Lundale Coal Co.,** the **Three Forks Coal Co.,** the **Logan County Coal Corporation** (which recently acquired the mines of the **McGregor Coal Co.**) and the **Amherst Fuel Co.** The name of the new corporation will be the **Logan County Coal Corporation** and its general sales offices will be located in Cincinnati with branches in Charleston and Philadelphia.

The Creech Coal Co., of Twila, Ky., which has marketed its product through the **Boone Coal Sales Co.** of Cincinnati, of which John Emslie was vice-president, will hereafter sell through its own agency—the Creech Coal Co., of which **Robert W. Creech** is president, **John Emslie** vice-president, and **J. E. Starbuck,** secretary and treasurer.

J. D. A. Morrow was in Cincinnati recently looking over the field for the location of the branch office of the **Morrow-Callahan Coal Co.** to be established in the Queen City.

The Holmes Coal Co., which started off early in November, has taken over the entire selling end of the **Jewett Bigelow & Brooks Co.,** and things have been shaped up for speeding the production from these properties up to 2,000,000 tons a year.

Jobbers, brokers and wholesalers recently added to the one hundred odd coal firms doing business in Cincinnati have been: **The Brady-Tucker Coal Co., Valley Coal Co., Three States Coal Co., Co-Operative Coal Co., Hughes Coal Co.,** and a branch of the **Ehrlich-Pierce Coal Co.,** Chicago.

PENNSYLVANIA

An investigation is under way by Mine Inspector P. J. Moore, to ascertain direct cause of the dynamite explosion at the Jermyn mine of the **Hudson Coal Co.,** which resulted in the death of John Walsh, aged 35, of Jermyn and the serious injury of two other men.

Additional technical questions raised by anthracite coal companies which are endeavoring to have the state coal tax law declared unconstitutional have been overruled by decisions of the Dauphin County Court. These questions were raised in addition to the ones set up in the case which the companies lost in the lower court and in the State Supreme Court and which now is pending in the Supreme Court of the United States. In one of the cases the **Mill Creek Coal Co.** sought to escape paying a tax of **$9,081.18** levied on coal mined during the last six months of 1921 and in the second case the **Philadelphia & Reading Coal & Iron Co.** had appealed from a coal tax of **$477,619,** covering the same period of last year.

The Whyel Coke Co. of Uniontown, has purchased the holdings of the **Flat Run Gas Co.** in West Virginia, consisting of about 1,500 acres of Pittsburg seam coal in the Mannington field, Marion County. The consideration is said to be about $750,000.

Recent bituminous coal mine incorporations at Harrisburg were: **Peerage Coal Mining Co.,** Johnstown; capital stock, $40,000; Gordon C. Hutchison, Johnstown, treasurer. Incorporators, Thomas A. Allen, Toner S. Yoder and Samuel Davis, Nanty Glo. **Stewart & Forsyth, Inc.,** Clearfield, $5,000; John C. Forsyth, Clearfield, treasurer. Incorporators: L. F. Stewart, Clearfield; H. D. Stewart, Syracuse, N. Y., and John C. Forsyth, Clearfield. **Saxmont Coal Co.,** Pittsburgh, $105,000; A. B. Forncrook, Edgewood, treasurer. Incorporators: A. B. Forncrook, H. S. Edwards and M. N. Thompson, Edgewood. **Phillipston Mining Co.,** Philadelphia, $50,000; Thomas Jackson, Parkers Landing, treasurer. Incorporators: Charles Mineo, Pittsburgh; R. B. Conley, Phillipston, and Thomas Jackson, Parkers Landing. **Continental Bituminous Mining Co.,** Clearfield, $30,000; T. Huston Hartswick, Clearfield, treasurer. Incorporators: Joseph Boron, Ramey; John Boron, Ginter, and T. C. Richards, Ramey. **James I. Feather Coal Co.,** Uniontown, $100,000; James I. Feather, Uniontown, treasurer. Incorporators: James I. Feather, C. W. Rush and L. V. Phillips, Uniontown.

David Dunn, of Sunnyside, has been promoted from the position of superintendent of the Ella mine of the Hillman Coal & Coke Co., to the position of superintendent of the Jerome mine of the same company in Somerset County, with headquarters at Jerome, to succeed Joseph T. Trevonow, resigned.

A state charter has been issued at Harrisburg to the **Nanticoke Valley Coal Co.,** Wilkes-Barre. Its capital is $100,000 and Arthur J. Santry, Brookline, Mass., is treasurer. The incorporators are Ernest M. Chapman, Boston, Mass.; Nat D. Steven and Charles B. Waller, Wilkes-Barre.

Other companies incorporated at Harrisburg recently include: **Spring Run Collieries Co.,** Wilkes-Barre, capital, $25,000; Percy E. Griffith, Luzerne, treasurer. Purpose; Mining and preparing coal for the market. Incorporators: John C. Haddock, Wilkes-Barre; John H. Doran, Kingston and Percy E. Griffith, Luzerne. **Candleman Collieries Co.,** Wilkes-Barre, $225,000 capital stock; Henry W. Ely, 143 Liberty St., New York City, treasurer. Purpose: Mining, preparing, shipping and selling coal. Incorporators: John C. Haddock, Wilkes-Barre; Henry E. Meeker, 143 Liberty St., New York City, and Percy E. Griffith, Luzerne. **Merrit Coal Mining Co.,** Patton, $10,000; W. J. Bortman, Patton, treasurer, mining, selling and shipping coal; incorporators, W. J. Bortman, L. W. Maurer and Patrick Callahan, Patton. **Knapps Run Coal Co.,** Kittanning, $25,000; R. E. Ball, Kittanning, treasurer; mining coal for the market; incorporators, J. F. Carpenter, W. W. Morrison and R. E. Ball, Kittanning. **Cosco Gas Coal Co.,** Butler, $75,000; Fred Stover, Butler, treasurer, purchasing, leasing and operating coal lands; incorporators, Fred Stover, W. Earl Stover and E. F. Fisher, Butler. **Jefferson Coal & Coke Co.,** Pittsburgh, $30,000; J. P. Cameron, Pittsburgh, treasurer; mining, producing, buying and selling coal and coke; incorporators, J. P. Cameron and L. F. Crawford, Pittsburgh and W. A. McBride, Houston, Pa. **Youngstown Coal Co.,** Uniontown, $50,000; William C. Black, Uniontown, treasurer; mining, quarrying and boring for coal and limestone.

A deal involving the sale of the holdings of the **Smokeless Coal Co.,** with offices in Ebensburg, was closed recently, whereby Eastern capitalists become the owners of the entire holdings. The consideration is in approximately $750,000. This company, one of the largest in central Pennsylvania, was controlled by Cambria County capitalists. The holdings consist of 2,000 acres of coal land in East and West Carroll townships and interests in allied companies to the extent of 6,000 acres, together with about fifty houses at the main entrance to the mine at Carrolltown Roads. The coal mined by this concern is of the last drift of the Miller seam known, and because of the fine grade is much in demand in the large Eastern markets.

Representatives of many industries and the Johnstown Chamber of Commerce attended the official opening of the **Westinghouse Electric & Manufacturing Co.'s** new service station at Johnstown, recently. The establishment of the service station, which brings the Westinghouse company in closer contact with its customers in the large mining and industrial area centering in Johnstown, is considered a tribute to the rapid progress of industry in that district.

UTAH

The Pahvant Coal Co. has filed articles of incorporation. C. A. Quigley, formerly well known as an automobile dealer in Salt Lake City, is president; E. J. Welch, vice-president and treasurer and Frank B. Cook is secretary. The stock is divided into 20,000 shares of a par value of $100 each.

One of the strikers implicated in a near riot during the recent strike in Carbon County in which there was some shooting, has been **sentenced to the state prison** from one to twenty years.

The coal operators **indicted for alleged "price-fixing"** by the district grand jury have filed demurrers and both sides are **preparing for a stiff fight.**

VIRGINIA

Figures just released by the United States district engineer covering the **coal business of Hampton Roads for 1921,** show that of the total imports and exports at the Port of Norfolk, amounting to 11,510,105 tons, exclusive of bunker coal, 9,022,343, or 78 per cent was in the export of coal. Including bunkers the figures show that 82 per cent of this port's business was in coal. Tentative figures for the present year, incomplete, show approximately the same percentage of coal business.

Castner, Curran & Bullitt have withdrawn their collier, Winding Gulf, from the coal trade and have chartered her to carry lumber from the West Coast to the East. She was built for the coal trade, but dullness in the markets caused her withdrawal.

WEST VIRGINIA

Properties of the **Wyoming Pocahontas Coal & Coke Co.** in Raleigh and Wyoming counties, covering about 31,000 acres in the Sewell and Beckley measures were inspected by a party of officials of the above named company about the middle of November. The inspection was also made with a view to planning for the leasing of the remaining acreage to other operating concerns. Companies having property of the Wyoming Pocahontas Coal & Coke Co. under lease, plan the expenditure of about $5,000,000 toward the development of their properties, the Virginian already having expended about $3,500,000 so as to make possible the development of the property.

Charleston people have organized the **Max Coal Co.**, which will engage in the coal business in Kanawha County, being capitalized at $25,000. Offices will be at Charleston. Having an active part in launching this concern were: E M. Biddison, C. H. Hetzel, D. A. Hogg, Max Moses and W. E. Murrill.

Daniel Howard and others have launched the **Gordon Consolidated Coal Corporation**, of Clarksburg, with a view to operating in Harrison County. This company is capitalized at $100,000. The general office will be at Clarksburg. Others interested in the new corporation are: Hugh Gordon Smith, Paul W. Bailey, Margaret Gibson and George A. Smith, of Clarksburg.

Organization of the **Lubeno Coal Co.** of Wheeling, with a capital stock of $50,000 presages further development of Ohio County coal lands. Interested in this concern are Leo A. Coleman, Vernon Crites, Vernon Travis, Clem E. Peters and D. M. Aikman, all of Wheeling.

Charleston men have organized the **Emmart Coal Co.** of Charleston with a capital stock of $10,000. Active in effecting an organization of this company were: M. C. Jennings, E. L. Estill, L. H. Miller, A. P. Kilburn, N. F. Young, Jim McCreight, all of Charleston.

The Consolidated Gas Coal Co., of Fairmont, a trustee created with John Y. Hite as treasurer and H. H. Staggers as manager, has leased the mine and bought the equipment of Earl and G. Russell Rodgers, who were trading as **Rodgers Brothers**, Clarksburg. The land belonged to the Consolidation company originally, but was leased by the Fairmont Big Vein Coal Co., of which Dan Howard is president. This company sublet the lease to Rodgers Brothers.

The Baldwin Pocahontas Coal Co. will operate on a large scale in McDowell County, headquarters to be at Erin. This company is capitalized at $400,000. It was organized by R. E. Baldwin, Graham; Edwin Mann; Walter Perkins and George P. Crockett, of Bluefield.

The Best Coal Co. will operate on a fairly large scale in southern West Virginia high-volatile territory, having just been launched with a capital stock of $50,000, with headquarters at Charleston. Closely identified with the new concern are: W. A. Reese, J. E. Griffiths, George E. Brown, Roy Cox and G. A. Hinterleitner, all of Charleston.

The Alpha Portland Cement Co. has disposed of its Phoenix coal mine at Wolf Summit, the **Long Coal Mining Co.** taking it over Nov. 16.

Instead of trying the remaining seventy-five defendants charged with the **murder of Sheriff H. H. Duval** of Brook County on July 17, growing out of the attack on Cliftonville on July 17, on a murder charge, it seems probable that the state will elect to **try the remaining defendants on the charge of conspiracy.** It was the original purpose of the state to try the murder cases first but the difficulty of securing a conviction, as demonstrated in the trial of John Kaminski has led the state to indicate that it may alter its plans. There were no eye witnesses to the slaying of Sheriff Duval and it is therefore difficult to fasten the blame on any individual or individuals.

The Morrison Coal Co. will operate on a large scale in Wyoming County and other counties in southern West Virginia, having leased large tracts of smokeless coal. This company has just been organized for the purpose of developing the property leased, and has a capital stock of $500,000. The company was organized by Harry V. Campbell, I. L. Duffield, Fred O. Blue, O. R. Purvis, David W. Dunbar, all of Charleston.

Purchase of the **Byrer Coal Co.'s** plant at Byrer, Tigert's Junction, Barbour County, from Harry Byrer of Matinsburg and State Senator Hugh Byrer of Phillippi is announced by the **Howard Smokeless Coal Co.**, Clarksburg, a new concern, headed by Daniel Howard. The plant has a daily capacity of 1,000 tons and employs 175 men. A new opening will be made.

Increasing its capital stock from $300,000 to $600,000, the **Shriver Coal Co.**, of Morgantown, has devoted a part of its increased capital to the purchase of 900 acres of coal in the Pittsburgh and Sewickley veins, adjoining its present holdings on Scott's Run in the Monongalia field. The price paid for the tract secured was in the neighborhood of $250,000. Eventually the company will enlarge the scope of its operations by installing additional equipment at its tipple. It is also probable that a new opening will be driven to the Pittsburgh vein.

Organization of the **Superior Block Coal Co.**, of Morgantown, with a capital stock of $50,000 presages the development of a tract of coal in Cass District of Monongalia County, west of Cassville, where the new concern has acquired about 200 acres. Previous to the incorporation of the company, work had been started on the erection of a tipple so that it will be possible to initiate operations within a short time. Work has also progressed favorably on the heading. The new company has as its officers, Harold F. Smith, Morgantown, president; Harold G. Hodges, Morgantown, secretary and treasurer. Others interested in the company are Elizabeth Smith, Vesta B. Hodges and Donald G. Lazelle.

Since the purchase of the property, plants and assets of the **Bottom Creek Coal & Coke Co.** by the **Pocahontas Fuel Co.**, of which Isaac T. Mann is president, it is learned the consideration involved was in the neighborhood of $1,500,000. This new plant gives the Pocahontas company seventeen different operations, all but one of which are in the Pocahontas field.

Organization of the **Wise Pocahontas Coal Co.** presages development of smokeless coal land in the vicinity of Welch, which is to be the general office of the company, capitalized at $50,000. Leading spirits in the new concern are: J. W. Strickler, Sadie L. Strickler, W. H. Hatfield, J. W. Price, all of Welch; George R. Hairston, of Iaeger.

Following the purchase of a tract of 104 acres in the Bear Mountain section of Barbour County, E. D. Brown and others have organized the **Brown Coal Co.**, which has a capital of $125,000. Flemington is to be the general headquarters of the company. Among those having an active part in forming this concern are, in addition to E. D. Brown: John C. Brownfield, R. W. Henshaw of Uniontown, Pa.; R. J. Brown of Point Marion, Pa.; O. S. Brown of Smithfield, Pa.

Production on a fairly large scale will be undertaken in Harrison County by the **Tygart Valley Fuel Co.**, with general headquarters at Clarksburg. This concern has a capital stock of $100,000. Among those interested in the new enterprise are: E. M. Pendergrast, James G. Kidwell, James Gray, Lloyd Garrett, Jacob Black and O. H. Burgham, all of the Clarksburg.

The following foreign coal corporations, all chartered under the laws of New Jersey, have been authorized by the secretary of state of West Virginia to transact business in the state named. They are the **Blue Ridge Mountain Coal Co., the Barbour-O'Brien Coal Corporation and the Stevens Coal Co.**

The Elk River Coal & Lumber Co., Dundon, has awarded contract to the Phoenix Bridge Co., of Phoenixville, Pa., for six steel bridges for its subsidiary, **the Buffalo Creek & Gauley R.R.** The railroad company recently purchased considerable new rolling stock of heavier type, making it necessary to build stronger bridges to handle the traffic. The road runs from Widen, where the mines of the Elk River company are located, to Dundon, connecting there with the B. & O. giving the coal company an outlet for its products both east and west.

Creditors of the **Mason Coal & Chemical Co.**, of Harford, Mason County, having pressed for settlement, the entire plant and holdings have been advertised for sale at public auction. The assets of the company are approximately $250,000, but claims pending against this concern will practically equal the assets. The company was organized during the war for the purpose of mining coal and for the manufacture of bromine. Just about the time operations were begun the war came to an end and there was no longer any market for one of the principal products of the concern.

James A. Burns and **George Palmer** of Fayette City, Pa., together with West Virginia parties, have incorporated the **B. R. & P. Coal Company**, Fairmont, with a capital stock of $50,000.

The Acme Eagle Coal Co. has been organized for the purpose of engaging in the coal business in southern West Virginia high-volatile territory, this company having a capital stock of $25,000. Offices will be at Huntington. W. E. Deegans is one of the principal figures in the new concern. Associated with him are: J. Frank Grimet, J. M. Turner, J. H. Taylor and O. C. Huffman.

WYOMING

Heavy snows are somewhat delaying the surface construction of the **new mine of the M. H. Shields Coal Co.**, six miles from Gillette, near the Sheridan field, on the Billings line of the C., B. & Q. The coal bed is 9o ft. thick and only about 20 ft. from the surface at the point of attack. Stripping is impractical because a hill increases the cover materially over most of the acreage. M. H. Shields, president of the Bank of Gillette, controls the company. **Thomas Hotchkiss** has charge of the mining work.

The Homestake Mining Co., of Lead, S. D., probably the greatest gold mine in the world, has acquired a considerable acreage of coal land near the Shields mine, at Gillette. A thick seam is overlaid by 20 ft. of cover, which, with the coal, will be mined by a steam shovel strip operation. A model townsite has been laid out, but heavy snows will delay construction work until spring. B. C. Yates, superintendent of the Homestake, will have general supervision, but **Ed. G. Ross** will be in actual charge at Gillette.

The Hanna Coal Co. of Rock Springs, recently incorporated with a capital stock of $250,000. The directors named are John W. Hay, Mary A. Hay and Beulah J. Hay.

The Community Coal Co. has filed articles of incorporation. The object is to operate a lease in Pinta County. Incorporators are R. E. L. Connelly, president; O. H. Mathews. Evanston, vice-president and general manager; Mrs. M. E. Mathews. secretary-treasurer and two other directors.

CANADA

Construction in Montreal of a **large crushing and screening plant** to handle thousands of tons of Welsh anthracite annually is planned by a group of local coal importers and dealers, who have interested a Welsh colliery firm in the project and have already approached the Harbor Commission in regard to a waterfront site. The scheme is a sequel to the coal shortage caused by the recent miners' strike in the United States, and is regarded by the backers as one step in the direction of Canadian independence, so far as American mines are concerned.

The Craig Coal Co.. Ltd., recently formed. has opened a wholesale office at Toronto. The head of the company is John Craig. formerly treasurer of the F. P. Weaver Coal Co. and a former secretary of the Toronto Wholesale Coal Dealers' Ass'n.

The William Hogg Coal Co., Ltd., has been organized in Waterloo. Ont.. and has been granted an Ontario charter to engage in the wholesale coal business. The authorized capital is $200.000 and among the incorporators are William Hogg. W. L. Hogg, F. W. Hogg and G. D. Hogg.

A severe "bump" occurred in No. 1 East Mine, **Crow's Nest Pass Coal Co.**, Coal Creek, B. C., on Nov. 13 last. Although haulage and traveling ways in the main counter tunnel were shattered no one was seriously hurt, and only one man was injured. All men in the mine were withdrawn immediately and that section of the workings has been closed down temporarily. The movement appears to have been general, having been felt in the town of Fernie a few miles distant.

OCTOBER OUTPUT IN BRITISH COLUMBIA

VANCOUVER ISLAND DISTRICT

Mine.	Tons.
Western Fuel Corp.	70,904
Canadian Collieries (D) Ltd., Comox	32,251
Canadian Collieries (D) Ltd., Extension	18,552
Canadian Collieries (D) Ltd., South Wellington	7,202
Granby Cons. M. S. & P. Co.	25,047
Nanoose Wellington Collieries	9,779
Old Wellington	1,193
Total	164,928

NICOLA-PRINCETON DISTRICT

Middlesboro Collieries	5,079
Fleming Coal Co.	2,653
Coalmont Collieries	14,455
Princeton Coal & Land Co.	2,031
Total	24,218

CROW'S NEST PASS DISTRICT

Crow's Nest Pass Coal Co., Coal Creek	33,277
Crow's Nest Pass Coal Co., Michel.	27,692
Corbin Coal & Coke Co.	4,516
Total	65,485
Total, October	254,631

The Craig Coal Co., Ltd., has been organized in Toronto and has been granted an Ontario charter authorizing the company to engage in a wholesale and retail coal business. The authorized capital is $40,000 and among the incorporators are John Callahan, Frank Regan and Joseph Garvey, Toronto.

The Provincial government of Ontario has provided a **penalty of $20 and costs for each sale of coal** by dealers **at prices in excess of those set** by Fuel Controller Ellis. It is at present applicable only to Niagara Falls but its operation will be extended to any municipality on the request of the local authorities.

The hard-coal situation at Port Arthur could hardly be worse. Only two cargoes have arrived at the Canadian Head-of-the-Lakes, since the strike. Fort William has received about six cargoes, but the larger portion of these go directly overland to Winnipeg. Winnipeg is also receiving coke from the byproduct plants in Minneapolis and St. Paul, Minn.

WASHINGTON, D. C.

The Supreme Court has advanced and set for argument on March 5 the appeal of the United States against the **New River Collieries Co.**, of New Jersey, a case which involves the price to be paid by the federal government for coal requisitioned by it under the Lever Act. It was asked that the case be expedited as a number of other similar suits by other companies are pending and awaiting final decision on this as a precedent. The company filed three suits against the government to recover additional amounts for requisitioned coal. It won a judgment of $242,080.29 in the district court which was affirmed by the circuit court of appeals, the government then going to the Supreme Court on a writ of error.

Traffic News

The application of the **Chicago & Northwestern Ry.** for relief from the long- and short-haul provision of the Act to Regulate Commerce, when applied to coal and coke from Milwaukee to various points in Wisconsin, has been denied by the Interstate Commerce Commission.

Talk of a **connecting or branch line between the Greenbrier field of West Virginia and the main line of the Chesapeake & Ohio** so as to provide a more adequate outlet, gives promise of soon becoming a reality since engineers are now engaged in making a preliminary survey for a branch line to connect with the Greenbrier & Eastern. Coal originating in the Greenbrier field is shipped over the Greenbrier & Eastern and thence over the Sewell Valley to the C. & O., but development of the field is limited owing to the inability of the Sewell Valley to handle any more coal.

Although **marine insurance** on Great Lakes shipping expires Nov. 30 at midnight an **extension** at increased rates has been made to Dec. 15.

There was argued before the I. C. C. at Washington on Nov. 13 a petition to require the Virginian **to establish a pro-rate West** with the Chesapeake & Ohio **on coal from the Winding Gulf field** and to establish an interchange at Deepwater. Inasmuch as the operators on the Virginian are divided as to the advisability of such a move, those opposed to the establishment of the through rate and the interchange filed an intervening suit. No decision on this question is expected for some time.

Association Activities

Fayette-Greene Coal Producers' Association

Operators of the Connellsville region were promised that "everything possible" would be done to increase the car supply to mines along the F. M. & P. branch at a conference between railroad officials and a committee representing the newly organized Fayette-Greene Coal Producers' Association. The operators were represented by E. D. Brown, J. B. Easter and W. J. Ruble and the complaint was laid before R. W. Brown, superintendent of the Connellsville division of the B. & O. The coal association later received an acknowledgement of the complaint from W. G. Curren, superintendent of transportation on the B. & O. Car placements are averaging about 20 per cent on the F. M. & P. branch.

Recent Patents

Car-Dumping Apparatus. W. R. Coleman, Birmingham, Ala., assignor to the Anniston Electric Steel Corp., Birmingham, 1,428,005. Sept. 5, 1922. Filed Sept. 7, 1918; serial No. 253,067. Renewed Dec. 5, 1921; serial No. 520,126.

Surveying Instrument. A. D. Hadsel, Iowa Hill, Calif., assignor of one-half to F. N. Woods, Jr., San Francisco, Calif., 1,428,028. Sept. 5, 1922. Filed Dec. 27, 1920; serial No. 433,381.

Track Brake for Mine Cars. J. F. Yeckel, Lawrence, Pa.; Wilma B. Yeckel, administratrix of J. F. Yeckel, deceased, 1,428,069. Sept. 5, 1922. Filed March 20, 1920; serial No. 367,564.

Dredging-Hoist Trolley. J. Perna, Philadelphia, Pa., 1,428,114. Sept. 5, 1922. Filed July 21, 1919; serial No. 312,418.

Gasification of Coal or Other Carbonaceous Material. A. McDougall Duckham, London, Eng., 1,428,421. Sept. 5, 1922. Filed May 2, 1921; serial No. 466,223.

Crusher and Pulverizer. Harold M. Plaisted, St. Louis, Mo., assignor in part to the Williams Patent Crusher & Pulverizer Co., St. Louis, 1,427,842. Sept. 5, 1922. Filed July 19, 1920; serial No. 397,424.

Mining Machine. M. P. Holmes, Claremont, N. H., assignor to Sullivan Machinery Co., Chicago, Ill., 1,428,505. Sept. 5, 1922. Filed Dec. 11, 1918; serial No. 266,313.

Flushing Apparatus for Mines. W. Weber, Wiesbaden, Germany, assignor to the Firm Gewerkschaft Hansbach II, Wiesbaden, Germany, 1,428,728. Sept. 12, 1922. Filed Jan. 22, 1921; serial No. 439,272.

Mine Car. Carl Scholz, Charleston, W. Va., 1,428,985. Sept. 12, 1922. Filed Oct. 25, 1921; serial No. 510,321.

Drilling Bit. W. A. Legate, Guthrie, Okla., assignor of one-half to Garmet C. Sandidge and C. R. Damon, both of Guthrie, Okla., 1,429,041. Sept. 12, 1922. Filed May 5, 1921; serial No. 466,925.

Mine Locomotive. J. F. Joy, New Bethlehem, Pa., assignor to Joy Machine Co., Pittsburgh, Pa. Sept. 12, 1922. Filed March 20, 1919; serial No. 283,822.

Danger Signal for Mines. R. W. Lightburn, Gans, Pa., 1,429,211. Sept. 12, 1922. Filed April 17, 1922; serial No. 553,503.

Coke Oven. Paul Goffart, Brussels, Belgium, assignor to Belgian American Coke Ovens Corp., Wilmington, Del., 1,429,281. Sept. 19, 1922. Filed April 8, 1920; serial No. 372,111.

Differential Flotation Process. Blamey Stevens, Triumfo, Paja California, Mexico, 1,429,544. Sept. 19, 1922. Filed March 8, 1920; serial No. 364,033.

Rock Drill. Wm. A. Smith, Phillipsburg, N. J., assignor to Ingersoll-Rand Co., Jersey City, N. J., 1,429,786. Sept. 19, 1922. Filed Aug. 13, 1920; serial No. 403,357.

Universal Joint for Coupling Shaft. C. M. Spangler, Emporium, Pa., 1,429,980. Sept. 26, 1922. Filed Dec. 16, 1921; serial No. 522,786.

Plant for Separating Coke from Waste Fuel and Residues. W. Weber, Wiesbaden, Germany, assignor to the Firm Weber & Co., Gesellschaft fur Bergbau, Industrie und Bahnbau, Wiesbaden, Germany, 1,429,987. Sept. 26, 1922. Filed Dec. 27, 1920; serial No. 433,471.

Process of Handling Coal. J. H. D. Petersen, Chicago, Ill., assignor to the Link-Belt Co., Chicago, Ill. Sept. 26, 1922. Filed Aug. 12, 1918; serial No. 249,467.

Coal Washer. Fernand Courtoy, Brussels, Belgium, 1,430,216. Sept. 26, 1922. Filed June 24, 1919; serial No. 306,460.

Miner's Lamp. Peter Miglio, Marseilles, Ill., 1,430,247. Sept. 26, 1922. Filed March 29, 1922; serial No. 547,760.

Rope-Thrusting Shovel. Walter Ferris, Milwaukee, and Svante R. W. M. Bager, South Milwaukee, Wis., assignors to the Bucyrus Co., South Milwaukee, Wis., 1,430,298. Sept. 26, 1922. Filed Aug. 3, 1921; serial No. 489,408.

Fluxer for Fuel-Briquet Material. G. Komarek, Chicago, Ill., assignor to Malcolmson Engineering & Machine Corp., St. Louis, Mo., 1,430,384. Sept. 26, 1922. Filed April 1, 1919; serial No. 286,788.

Method of Treating Fuel for Briquetting Purposes. G. Komarek, Chicago, Ill., assignor to Malcolmson Engineering & Machine Corp., St. Louis, Mo., 1,430,386. Sept. 26, 1922. Filed Dec. 31, 1920; serial No. 434,342.

Mining Machine. Morris P. Holmes, Claremont, N. H., assignor to the Jeffrey Mfg. Co., Columbus, Ohio, 1,430,522. Sept. 26, 1922. Filed (renewed) Feb. 13, 1922; serial No. 536,369.

Trade Literature

De-aeration of Water to Prevent Corrosion in Piping. Economizers and Boilers. H.S.B.W.-Cochrane Corp., Philadelphia, Pa. Pp. 15; 4 x 9 in.; illustrated. Describes apparatus designed to deliver water free of dissolved oxygen at any temperature from 140 deg. F. up.

Cutler Steel Co., Pittsburgh, Pa., Bulletin No. 221, 4-page folder, on **Duraloy**, 8 x 11 in., describes the physical properties of Duraloy, its composition and characteristics, strength at high temperatures, machining and welding qualities, oxidation and heat resistance, corrosion and abrasion resistance.

Portable Loaders. Link-Belt Co., Chicago, Ill. Book 550. Pp. 33; 8 x 11 in.; illustrated. Among the loaders described in this catalog are the large one-man Power Swiveling Loader, the Portable Belt Conveyor, standard type "A" machine for anthracite and the "CS" Loader for handling sand and gravel.

Publications Received

The Reheating of Compressed Air, by C. R. Richards and J. N. Vedder, The Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 130. Pp. 95; 6 x 9 in., illustrated.

The publication of **Technical Paper 308, "Analyses of Kentucky Coals,"** containing the results of chemical analyses and heating-value determinations of several hundred Kentucky coals, is announced by the Bureau of Mines. This is the second of a series of technical papers issued by the Bureau dealing with the characteristics of the coals of the various states. Technical Paper 269, relating to Iowa coals, was published some months ago.

Obituary

L. E. Whitney, assistant to the vice-president of the North Western Fuel Co., St. Paul, died late in November. He was 47 years of age, and had been with the company for nineteen years. A widow and three children survive him.

H. C. Brodhead, 74 years old, geologist and one of the discoverers of the Brodhead coal vein in the Trinidad district, died recently in Denver. Mr. Brodhead and his brother, Albert G. Brodhead, came to Colorado thirty years ago from the coal fields of Pennsylvania. Together they discovered the Brodhead vein, one of the biggest coal producers in Colorado. The brother died in Denver last winter.

The death of **George Madden**, head of the firm of Madden & Son, Quebec, coal merchants, occurred on Nov. 17. Mr. Madden took an active part in public affairs and was for many years a member of the City Council.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at the Illinois Union Bldg., cor. Wright and John St., Champaign, Ill. Secretary, Martin Bolt, Springfield, Ill.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6, at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.